COLUMBIA LIBRARIES OFFSITE
HEALTH SCIENCES RESTRICTED
HR00237507

y
l

ch

M

39
1910/11

Columbia University
in the City of New York

College of Physicians and Surgeons

Reference Library

Statistical Laboratory
Kent Hall
Columbia University
New York

THIRTY-NINTH ANNUAL REPORT

OF THE

SECRETARY

OF THE

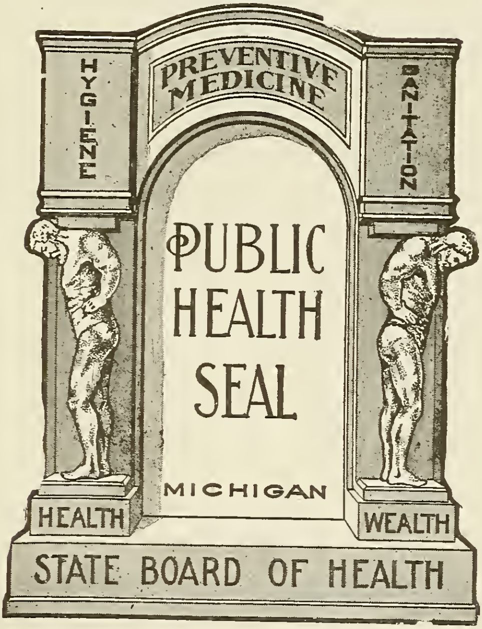
STATE BOARD OF HEALTH

OF THE

STATE OF MICHIGAN

FOR THE

FISCAL YEAR ENDING JUNE 30, 1911.



BY AUTHORITY

LANSING, MICHIGAN
WYNKOOP HALLENBECK CRAWFORD CO., STATE PRINTERS
1912

LETTER OF TRANSMITTAL.

Office of the
Secretary of the State Board of Health,
Lansing, Michigan, December, 1911.

To Hon. Fred M. Warner, *Governor of Michigan:*

Sir:—In compliance with the laws of this State, I present to you the accompanying report for the fiscal year ending June 30, 1911.

Very respectfully,
FRANK W. SHUMWAY,
Secretary of the State Board of Health.

CONTENTS.

Page.
Title Page 1
Letter of transmittal 3
Members of the State Board of Health 5
Contents 7
Regular and special meetings of the Board, fiscal year, 1911 11–12
Examination of plans for State buildings 13–14
Examination and licensing of embalmers 14
General and special work and expenditures, in the office of the Secretary, fiscal year, 1911 . 15–29, 43
Public health legislation, in Michigan, in 1911 29–41
Communicable diseases, in Michigan, in 1910 and preceding years 47–113
    Introduction 47–48
    Pneumonia 48–59
    Tuberculosis 60–78
    Meningitis 78–84
    Typhoid fever 85–96
    Diphtheria 97–100
    Whooping-cough 101–103
    Scarlet fever 103–106
    Measles 107–108
    Smallpox 108–111
    Poliomyelitis (Infantile paralysis) 112
    Chicken-pox (Varicella) 112
    Mumps (Parotitis) 112
    Erysipelas 112
    Tetanus (Lock-jaw) 112–113
Diseases of animals, dangerous to man, in Michigan, in 1910 113
    Rabies (Hydrophobia) 113
    Actinomycosis (Lumpy-jaw) 113
Alleged nuisances, in Michigan, in 1910 113–114

Digitized by the Internet Archive
in 2010 with funding from
Columbia University Libraries

http://www.archive.org/details/annualreportofs1911mich

PART I.

REPORT OF THE SECRETARY FOR THE FISCAL YEAR, JULY 1, 1910, TO JUNE 30, 1911.

EXTRACTS OF MINUTES OF BOARD MEETINGS.

REGULAR MEETING, HELD AT DETROIT, JULY 8, 1910.

The members present were: President Angus McLean, M. D., Charles M. Ranger, A. B., Charles A. Blake and F. W. Shumway, M. D., Secretary.

Messrs. Ranger and Blake and Dr. F. W. Shumway were appointed delegates to the Conference of Embalmers' Examining Boards of North America, to be held in Chicago.

Dr. F. W. Shumway was delegated to represent this Board at a meeting of the American Public Health Association, to be held at Milwaukee, September 5-9, 1910.

REGULAR MEETING, HELD AT LANSING, OCTOBER 14, 1910.

The members present were: Vice-President M. C. Sinclair, M. D., Aaron R. Wheeler, M. D., Charles M. Ranger, A. B., Charles A. Blake and F. W. Shumway, M. D., Secretary.

The reports of the State medical inspectors, for the last quarter of the year, were read and approved.

The Secretary was instructed to have suitable blanks prepared for the reporting of poliomyelitis by local health officers to this Department, and the same to be recorded as other communicable diseases.

A complaint relative to a man embalming dead human bodies contrary to law was referred to Mr. Ranger with power to act as he thought best.

REGULAR MEETING, HELD AT LANSING, NOVEMBER 17, 18 AND 19, 1910.

The members present were: Charles M. Ranger, A. B., Charles A. Blake and F. W. Shumway, M. D., Secretary.

At this meeting the regular embalmers' examination was conducted, twenty-seven applicants being examined.

SPECIAL MEETING, HELD AT LANSING, NOVEMBER 17, 1910.

The members present were: President Angus McLean, M. D., Vice-President M. C. Sinclair, M. D., Charles M. Ranger, A. B., Charles A. Blake and F. W. Shumway, M. D., Secretary.

This meeting was called for the purpose of considering the various epidemics of smallpox existing in the State.

Dr. E. C. Kinsman, a member of the Saginaw City Board of Health, appeared before the Board and gave them a complete report of the smallpox epidemic at Saginaw, and asked the advice of the Board relative to opening the schools, churches and other public places.

REGULAR MEETING, HELD AT LANSING, JANUARY 13, 1911

The members present were: Vice-President M. C. Sinclair, M. D., Aaron R. Wheeler, M. D., Victor C. Vaughan, M. D., Charles M. Ranger, A. B., George S. Harrington and F. W. Shumway, M. D., Secretary.

(George S. Harrington, of Kalamazoo, was appointed a member of the State Board of Health to fill the vacancy caused by the death of Charles A. Blake, December 9, 1910).

The reports of the various medical inspectors for the past quarter of the year were read and approved.

The Secretary was instructed to prepare a leaflet, dealing with venereal diseases, to be submitted to the Board at its next meeting.

The following resolutions, on the death of Charles A. Blake, were unanimously adopted:

WHEREAS; The Michigan State Board of Health has lost, by the death of Charles A. Blake, a painstaking official, an agreeable associate, and a kind hearted friend, therefore,

Be it Resolved, That all the members of the State Board of Health express, by formal action, our appreciation of Mr. Blake's services on the Board, and be it further

Resolved, That all extend to the bereaved family our sincere sympathy; and be it also

Resolved, That these resolutions be made part of the records of the State Board of Health, and that a copy of them be forwarded to the family of the deceased.

The following text books on physiology were placed on the accredited list: Hall's Elementary Physiology, Hewes' High School Physiology, Hoag's Health Studies and Hall's Primer of Hygiene.

SPECIAL MEETING, HELD AT LANSING, APRIL 4, 1911.

The members present were: Aaron R. Wheeler, M. D., Thomas M. Koon, M. D., Charles M. Ranger, A. B., George S. Harrington, J. H. Kellogg, M. D., and F. W. Shumway, M. D., Secretary.

This special meeting was called for the purpose of conferring with representatives of the various railroad companies of the State relative to amending the railroad sanitation law, and to consider such other business as might come before the Board.

REGULAR MEETING, HELD AT LANSING, APRIL 14, 1911.

The members present were: Victor C. Vaughan, M. D., Aaron R. Wheeler, M. D., J. H. Kellogg, M. D., Thomas M. Koon, M. D., Charles M. Ranger, A. B., George S. Harrington and F. W. Shumway, M. D., Secretary.

At this meeting, Dr. Victor C. Vaughan, was elected President and Dr. Aaron R. Wheeler Vice-President of the Board.

The reports of the various medical inspectors were read and approved.

Rules and regulations, relative to the manner in which the bodies of dead animals should be prepared for shipment to the State or private laboratories, were adopted.

The Ritchie-Caldwell series of physiologies were placed upon the accredited list by the Board.

EXAMINATION OF PLANS FOR STATE BUILDINGS.

During the fiscal year, ending June 30, 1911, plans for the undermentioned buildings in connection with State institutions were examined by the State Board of Health and opinions offered thereon, in accordance with the provisions of Section 2229 of the Compiled Laws of 1897:

Barn building at the State Industrial School for Boys, Lansing.—With one minor exception, these plans were approved.

Cow stable at the Eastern Michigan Asylum, Pontiac.—Suggestions were made for changes in the arrangement of the vitiated-air flues and in the trapping of the sewers.

Dining-room building at the Upper Peninsula Hospital for Insane, Newberry.—Criticism was made relative to the lack of ventilation for the rooms on the second floor which would be used as sleeping rooms.

Addition to the Children's Hospital at the State Public School, Coldwater.—Three different sets of plans were examined for this addition, the final set being approved conditionally.

Preliminary structure of a dairy barn at the State Sanatorium, Howell.—Criticism was made relative to the height and location of the ventilating flues, but the architects stated that these matters would be properly taken care of when the building was completed at some time in the future.

Proposed drain at the State Sanatorium, Howell.—With one or two minor exceptions, the plans were approved.

Addition to the Chemical Laboratory at the Michigan Agricultural College, East Lansing.—Recommendations were made relative to the ventilation of the laboratories and the laboratory sewers.

Cold storage building at the Northern Michigan Asylum, Traverse City.—Plans approved.

By reason of the fact that many plans of State buildings were not submitted to this Board in the manner contemplated by the law, on August 18, 1910, the following letter was sent to every member of the boards of control and to the executive officers of all State institutions:

GENTLEMEN:

Permit me to call your attention to the fact that, in many instances, plans for new buildings and for systems of sewerage, ventilation or heating of buildings at State institutions are not submitted to this Board *prior to their adoption by the governing bodies of the institutions*, as required by Act No. 206, Laws of 1881 (Section 2229, Compiled Laws of 1897), and contracts are often let and considerable progress made in the construction of buildings, etc., before this Board has had an opportunity to offer an opinion thereon. If the opinion of this Board upon such matters is worth anything to your Boards, it should certainly be obtained before a contract for the work has been let or the construction of the building, etc., commenced.

Another point to which I desire to call your attention is the practice, by many State Boards, of submitting to this Board plans for the structure of a building, only, accompanied with the statement that the warming, ventilation, or sewerage, as the case may be, will not be included in the contract but will be taken care of by the institution. It is scarcely necessary to state that the plans submitted to this Board for examination should include every detail of the work upon which the Board is required by law to offer an opinion.

I desire to assure you that any complete plans which you may submit to this Board at any time will receive prompt examination and the most careful consideration.

Very truly yours,
(Signed) F. W. SHUMWAY,
Secretary.

EXAMINATION AND LICENSING OF EMBALMERS.

Under the provisions of Act No. 132, Laws of 1903, three examinations were held during the fiscal year ending June 30, 1911, as follows:

Detroit, July 16, 17 and 18, 1910.

Lansing, November 16, 17 and 18, 1910.

Grand Rapids, June 7, 8 and 9, 1911.

Of the 92 persons examined, 63 were granted licenses.

Reciprocal licenses were granted in fifteen instances.

A statement of expenses incurred in the operation of Act 132, Laws of 1903, may be found on a subsequent page of Part I of this report.

The following letter, issued in November, 1910, will serve to show the scope of the embalmers' examination, and the conditions to be complied with on the part of the applicants for examination:

State Board of Health,
OFFICE OF THE SECRETARY, LANSING.

To the Funeral Directors and Embalmers.

Gentlemen:

You are hereby informed that a meeting of the State Board of Health, called for the purpose of conducting an embalmers' examination, will be held in the Senate Chamber, Lansing, November 16, 17 and 18, 1910. The examination will commence at 9 o'clock, Wednesday morning, November 16.

Candidates will be required to take both *written* and *oral* examinations with demonstration on the cadaver. Oral examinations will be given in the order applications are received. Some of the general subjects included in the written examinations are:

(a) Visceral anatomy and the circulation of the human body, both arterial and venous.

(b) The nature, action, modes of action and comparative value of disinfectants.

(c) The method of embalming and preparing bodies for transportation, also shipping rules.

(d) How diseases are spread; the best method for the restriction of diseases, and bacteriology in relation to the spread of diseases.

(e) The signs of death and the manner in which it is determined.

Those who desire to take the examination at this time must fill out and return to the Secretary of the Board, the enclosed application blank, with an unmounted photograph of the applicant, signed in ink on the back, and properly certified to by a notary. A fee of five dollars must accompany the application. Remittances may be made by express or postoffice money order or by registered letter. *Personal checks cannot be used.*

Applications should be on file in this office *one week* before the date of examination.

Application must be made in the name of an individual, and not of a firm.

Applicant's name must be signed in full.

In the examination, a rating of at least seventy-five per cent must be made by the applicant to secure a license.

By direction of the State Board of Health. F. W. SHUMWAY,
Secretary.

GENERAL AND SPECIAL WORK IN THE OFFICE OF THE SECRETARY.

Much of the general work of the office naturally groups itself under three heads,—the collection of information, the compilation of information so collected, and the dissemination of such information as will be of service in the restriction and prevention of disease.

COLLECTION OF INFORMATION.

As the local health officer is the principal medium by which this Department may reach and instruct the public in matters pertaining to the prevention of sickness and deaths, the appointment, and the return of the names and postoffice addresses of the health officers, in each year, are matters of more than ordinary interest and importance.

In each year, it is often necessary to make a first, second and third request for information which will place this office in communication with the local health officers, and during the time which is thus used up in corresponding and waiting, an outbreak of a dangerous disease may begin and become widespread before this office can afford the usual assistance to the proper officials in the locality.

It should be said, however, that there is an increasing tendency to comply with the law in this particular, and local boards of health now generally act promptly and cooperate cordially with this Department for the suppression of disease.

Having established communication with the newly appointed local health officers, pamphlets and other publications which may aid them in their work, together with the usual blanks for reports of outbreaks of diseases in their locality, are mailed from this Department. In some instances, considerable correspondence is necessary to instruct the health officials how to properly care for sick and infected persons, and to make reports which will be of value in the compilations for the annual reports and other publications of this Department.

In addition to the collection of the usual information relative to outbreaks of dangerous communicable diseases in this State, special information, upon subjects of public interest and importance, is sometimes asked for and is usually cheerfully furnished by a large number of health officers and other persons from whom the information is sought.

DISSEMINATION OF INFORMATION.

As stated in the preceding paragraph, each newly appointed health officer is supplied, by this Department, with information relative to his duties. This information is contained principally in a pamphlet entitled "Health Officers' Manual," and in pamphlets covering the principal points in the etiology and methods of restriction and prevention of each of the dangerous communicable diseases.

Upon the receipt of information relative to an outbreak of a dangerous communicable disease, in addition to the usual instructions and blanks for making the reports, there are mailed to the health officers a sufficient number of pamphlets, relative to the particular disease then present, for distribution to the families and immediate neighbors of the sick person. In this way, the people are educated as to their duty, under the law, and their cooperation with the local health officers often secured.

A pamphlet covering the law respecting nuisances, and containing information relative to their suppression, is published, and distributed among those persons directly interested, when a complaint of a nuisance is made to this Department.

A pamphlet, giving the law, and regulations of this Department, respecting the preparation and shipment of dead bodies, is published, and distributed among the licensed embalmers, railroad officials, and other persons interested in the transportation of the dead.

ANNUAL REPORTS.

About 2,500 copies of the annual report are published each year and about 2,400 copies are distributed among the following:

Members and Ex-Members of the State Board of Health; Local Health Officers; Secretaries of State, Territorial and Provincial Boards of Health; Sanitary Journal Exchanges; Library Exchanges; City Hospitals and Sanatoriums; Presidents and Secretaries of County Medical Societies; the State Library and the Secretary of State.

NEOSTYLE WORK.

An important method of disseminating information, which has been used very extensively by this Department, is the preparation, by the neostyle, from time to time as occasion requires, of short articles, letters, etc., upon subjects of interest to the public health, and their distribution to editors of newspapers in this State, to the leading sanitary journals, and to any person who may be especially interested, or who will print or use them for the benefit of others.

During the fiscal year 1911, neostyle work to the amount of 4,490 impressions was prepared, and a large portion of it mailed immediately. The principal subjects were:

Circular letters relative to plans for State buildings.

Circular letter to health officers relative to drinking cups and bubbling fountains.

Circular letter to health officers relative to communicable disease work.

Circular letter to health officers relative to collecting and sending water samples for analysis.

Circular letter to health officers relative to public water supplies.

PUBLIC HEALTH BULLETINS.

During the fiscal year ending June 30, 1911, the principal subjects treated in the Quarterly Bulletin were as follows:

Third Quarter of 1910.—"Directions for Living and Sleeping in the Open Air," by Thomas Spees Carrington, M. D.; "In Memoriam," by the Michigan Department of Health; "Sewage Disposal," by Osborn

Congleton; "The Drinking Water Question," by the Michigan Department of Health; "Saving the School Funds," The Literary Digest.

Fourth Quarter of 1910.—"The Call to Public Health," by William T. Sedgwick; "Winter Cholera," by M. L. Holm, M. D.; "A Detective Story From North Adams," The Healthy Home; "Milk in Relation to Public Health," by George M. Kober; "Pneumonia is Contagious," The Dietetic and Hygienic Gazette; "Individual Drinking Cups," by Nellie C. Stevens.

First Quarter of 1911.—"Safeguarding the Health of School Children," by E. L. Parmenter; "Sixteen Reasons Why the United States Should Have a Department of Health," by the Committee of One Hundred; "Anti-Fly Crusade," by W. D. Biggers, M. D.; "A Fly Ordinance," by the Indiana State Board of Health; "A Little Story of the Visiting Nurse," by Ethel Van Benthuysen; "Bacteriology and its Relation to Public Health," by M. L. Holm, M. D.; "Prevention of Fourth of July Tetanus," Journal of the American Medical Association; "Scarlet Fever Quarantine," by the Indiana State Board of Health.

Second Quarter of 1911.—"Acute Anterior Poliomyelitis (Infantile Paralysis)," by the Michigan Department of Health; "General Prophylaxis of Typhoid Fever," Journal of the American Medical Association; "The Value of a Tuberculosis Class to a Community," Journal of Outdoor Life; "Baby Killers," from the United States Government List; "Indiana Child Creed," Indiana State Board of Health Bulletin; "Fatigue," by Prof. Irving Fisher.

Since 1907, this Department has been issuing a monthly bulletin which is mailed to the health officers, newspapers, a selected list of physicians, the Superintendent of State charitable, penal and reformatory institutions, members and ex-members of the State Board of Health and Sanitary Journal exchanges.

The monthly bulletin is designed, principally, to furnish to health officers and physicians information relative to the prevalence of the several dangerous communicable diseases in the State, but particularly in their immediate vicinity.

By a table in these bulletins, which shows the prevalence of the several diseases in each month of the year and in the average year, the time of the year when any disease may be expected to increase or decrease in prevalence, may be noted in advance; and comparisons may be made of the prevalence of the diseases in any two or more months in the same year, or between any month in the current year and the corresponding month in the average year.

Special mention is made in the bulletin each month of the disease which is usually most prevalent during the current month; and items of interest. which have an important bearing upon the public health, are inserted as space will permit.

Instructive diagrams, relating principally to the status of the several diseases, occupy the bulk of the front page of each issue of the bulletin.

PLACARDS ISSUED BY THIS DEPARTMENT.

The placards relative to "Resort Sanitation" were sent to all summer resorts in the State.

"Flies Poison Food," was the subject of a placard sent to the health officers, with instructions to distribute them among certain business places. Placards, giving warning relative to spitting on sidewalks or in other public places, were sent to the health officers, station agents, factory superintendents and others, who, in the opinion of this Board, would post the placards in conspicuous places.

The placards, "What to do for the Drowned," were sent to health officers and others upon request for the same.

INVESTIGATIONS MADE BY THE STATE MEDICAL INSPECTORS DURING THE FISCAL YEAR ENDING JUNE 30, 1911.

In addition to his attendance at the regular and special meetings of the State Board of Health and at the examinations of embalmers, which were held outside the city of Lansing, the Secretary of this Board, as a medical inspector, together with others acting in the same capacity, under Act 293, P. A., 1909, made visits to the undermentioned localities for the purposes named:

Fremont, July 21-22, 1910.—Investigation of the pollution of a stream and lake by F. W. Shumway, M. D.

Adrian, July 28-29, 1910.—Investigation of a sewer outlet and other nuisances by F. W. Shumway, M. D.

Garfield Township, Grand Traverse County, August 8-11, 1910.—Investigation of an outbreak of smallpox by F. W. Shumway, M. D.

Mackinac Island, August 15-18, 1910.—Investigation of an outbreak of smallpox by F. W. Shumway, M. D.

Plymouth, August 19, 1910.—Investigation of sewer connections and nuisances by F. W. Shumway, M. D.

Ottawa Beach, August 20-22, 1910.—Investigation of the condition of cesspools by F. W. Shumway, M. D.

Montgomery, September 1, 1910.—Investigation of an outbreak of poliomyelitis by R. S. Rowland, M. D., of Detroit.

Camden, September 2, 1910.—Investigation of an outbreak of poliomyelitis by R. S. Rowland, M. D., of Detroit.

Grand Rapids, October 12, 1910.—Inspection of the detention hospital by F. W. Shumway, M. D.

Frankfort, October 13-14, 1910.—Investigation of an outbreak of smallpox by F. W. Shumway, M. D.

Frederic, October 31-November 1, 1910.—Investigation of an outbreak of smallpox by F. W. Shumway, M. D.

Saginaw, October 31, 1910.—Investigation of smallpox epidemic by M. C. Sinclair, M. D., of Grand Rapids.

Bay City, November 4, 1910.—Investigation of an outbreak of smallpox by F. W. Shumway, M. D.

Saginaw, November 4, 1910.—Investigation of smallpox epidemic by F. W. Shumway, M. D.

Lapeer, November 10, 1910.—Investigation of smallpox epidemic at the Home for the Feeble-Minded and Epileptic by F. W. Shumway, M. D.

LAPEER, NOVEMBER 10, 1910.—Investigation of smallpox epidemic at the Home for the Feeble-Minded and Epileptic by A. P. Biddle, M. D., of Detroit.

SAGINAW, NOVEMBER 12, 1910.—Conference with the mayor, board of health and a committee of citizens relative to the smallpox situation by F. W. Shumway, M. D.

COLDWATER, NOVEMBER 14, 1910.—Investigation of an outbreak of scarlet fever by F. W. Shumway, M. D.

FLINT, NOVEMBER 16, 1910.—Investigation of an outbreak of chickenpox at the School for the Deaf by Guy L. Kiefer, M. D., of Detroit.

BATH TOWNSHIP, CLINTON COUNTY, NOVEMBER 27, 1910.—Investigation of a suspected case of smallpox by Brett Nottingham, M. D., of Lansing.

LAPEER, DECEMBER 3, 1910.—Investigation of complaints relative to the manner in which refuse was being disposed of at the Home for the Feeble-Minded and Epileptic by F. W. Shumway, M. D.

LAPEER, DECEMBER 22, 1910.—Raising the smallpox quarantine at the Home for the Feeble-Minded and Epileptic by F. W. Shumway, M. D.

PELLSTON, JANUARY 7-8, 1911.—Investigation of an outbreak of smallpox by E. A. Runyan, M. D., of Harbor Springs.

ALPENA, JANUARY 11-13, 1911.—Investigation of an outbreak of smallpox by Harvey Gilbert, M. D., of Bay City.

PELLSTON, JANUARY 25, 1911.—Investigation of an outbreak of smallpox by F. W. Shumway, M. D.

SARANAC, FEBRUARY 6, 1911.—Investigation of an outbreak of smallpox by Thos. M. Koon, M. D., of Grand Rapids.

KIMBALL TOWNSHIP, ST. CLAIR COUNTY, FEBRUARY 24-28, 1911.—Investigation of an outbreak of smallpox by John V. Frazier, M. D., of Lapeer.

MEMPHIS, MARCH 11, 1911.—Investigation of an outbreak of smallpox by F. W. Shumway, M. D.

JASPER TOWNSHIP, MIDLAND COUNTY, MARCH 14, 1911.—Investigation of an outbreak of smallpox by A. R. Wheeler, M. D., of St. Louis.

JASPER TOWNSHIP, MIDLAND COUNTY, MARCH 16, 1911.—Investigation of an outbreak of smallpox by F. W. Shumway, M. D.

BROOKFIELD TOWNSHIP, EATON COUNTY, APRIL 12, 1911.—Investigation of an outbreak of smallpox by W. H. Rand, M. D., of Charlotte.

ALLEGAN, APRIL 13, 1911.—Investigation of an outbreak of scarlet fever by Thos. M. Koon, M. D., of Grand Rapids.

HOME TOWNSHIP, NEWAYGO COUNTY, APRIL 21, 1911.—Investigation of an outbreak of smallpox by F. W. Shumway, M. D.

LEE AND CLARENCE TOWNSHIPS, CALHOUN COUNTY, MAY 3, 1911.—Investigations of outbreaks of smallpox by F. W. Shumway, M. D.

HOME TOWNSHIP, NEWAYGO COUNTY, MAY 8, 1911.—Investigation of an outbreak of smallpox by Thos. M. Koon, M. D., of Grand Rapids.

BALDWIN, MAY 13, 1911.—Inspection of the county jail by F. W. Shumway, M. D.

FREMONT, MAY 18-20, 1911.—Investigation of sewers and public water supply by F. W. Shumway, M. D.

CHEBOYGAN, MAY 31-JUNE 1, 1911.—Inspection of county jail and city detention hospital by F. W. Shumway, M. D.

Mt. Clemens, June 9-10, 1911.—Inspection of county jail by F. W. Shumway, M. D.

Honor, June 15, 1911.—Inspection of county jail by F. W. Shumway, M. D.

Manistee, June 17, 1911.—Inspection of jail by F. W. Shumway, M. D.

REPORT OF WORK IN THE DIVISION OF SANITARY ENGINEERING DURING THE FISCAL YEAR ENDING. JUNE 30, 1911.

Much of the work in this Division is carried on by correspondence and, occasionally, by telephone, detailed statements of which cannot be be given in this report for lack of space.

One of the important lines of work in the Division is the examination of plans for the warming, ventilation and sewerage of the buildings at State institutions, particulars of which are printed on a preceding page.

Upon request of school authorities and the State Board of Corrections and Charities, a number of plans for school buildings and the buildings of County institutions have also been examined and opinions given thereon.

On August 1, 1910, under the provisions of Act No. 293, Public Acts of 1909, the Sanitary Engineer was appointed a State Medical Inspector, and a considerable portion of his time has since been taken up in the making of investigations relative to nuisances, and the needs of localities in regard to sewerage, water supplies, and the warming and ventilation of school buildings. A list of the localities visited for these purposes during the fiscal year follows:

Milan, July 5, 1910.—Investigation of nuisance from stagnant water in several bayous on the line of the Saline river.

Cassopolis, July 8, 1910.—Investigation relative to the contamination of Stone Lake, from which the city water supply is obtained.

Hastings, July 11-12, 1910.—Inspection of two schoolhouses, and conference with the Board of Education relative to changes in the methods of warming and ventilating these buildings.

Flushing, July 14, 1910.—Inspection of the schoolhouse, and examination of plans for new methods of warming and ventilation and new toilet accomodation.

Caro, July 23, 1910.—Inspection of a proposed site for a sewage disposal plant, and examination of the grounds from which the public water supply is obtained.

Lakeview, August 29-30, 1910.—Conference with the local authorities relative to sewerage for the village, and inspection of the two schoolhouses.

Fremont, Sept. 16-17, 1910.—To learn what had been done in regard to the purification of the wastes from the plants of the Fremont Canning Company and the Fremont Leather Company.

Manistee, Sept. 19-21, 1910.—Inspection of the eight slaughter-houses in the city, and conference with the local authorities relative to means for the disposal of garbage.

Baldwin, Oct. 3-4, 1910.—Inspection, in conjunction with the Secretary of the State Board of Corrections and Charities, of the County Jail.

Manistee, Oct. 4-5, 1910.—Inspection, in conjunction with the Secretary of the State Board of Corrections and Charities, of the County Jail.

Traverse City, Oct. 5, 1910.—Inspection, in conjunction with the Secretary of the State Board of Corrections and Charities, of the County Infirmary.

Cheboygan, Oct. 6, 1910.—Inspection, in conjunction with the Secretary of the State Board of Corrections and Charities, of the County Jail.

Mason, Oct. 12, 1910.—Investigation relative to a nuisance from a ditch into which the sewage from the Court House, County Jail, and a number of private buildings in the city was being discharged.

Ionia, Oct. 18, 1910.—Conference with the Board of Supervisors and a committee of citizens relative to the establishment of a tuberculosis sanatorium in connection with the County Infirmary.

Benton Harbor, Oct. 25-26, 1910.—Inspection of the premises of the Eastman Springs Company and the House of David, with the view of locating the sources of contamination of certain springs from which water was being sold to the public.

Hastings, Oct. 28-29, 1910.—Investigation relative to the use of disused wells for the disposal of sewage.

Clio, Nov. 3, 1910.—Conference with school authorities relative to a sewage disposal plant for the schoolhouse.

Caro, Nov. 7-8, 1910.—Investigation relative to the working of the sewage purification plant at the sugar factory.

Escanaba, Dec. 4-8, 1910.—Investigation relative to the working of the water purification plant of the Escanaba Water Company.

Cassopolis, Jan. 10-11, 1911.—Conference with the citizens relative to sewerage for the city.

Alpena, Jan. 17-19, 1911.—Inspection of eleven schoolhouses in the city.

Coldwater, Jan. 24-25, 1911.—Inspection of the High School building.

Bay City, Feb. 1, 1911.—Investigation of the public water supplies.

Adrian Township, March 14, 1911.—Investigation relative to the improper disposal of sewage from St. Joseph's Academy.

Saginaw, March 20, 1911.—Inspection of sewers and premises in the vicinity of the 400 block on South Porter Street.

Lansing, April 5, 1911.—Inspection of a barber shop at 505 Franklin Avenue, East.

Cassopolis, April 20, 1911.—Investigation relative to the disposal of sewage from the Court House and Jail.

Hastings, May 15-16, 1911.—Conference with the School Board and a committee of fifteen citizens relative to the sanitation of two schoolhouses in the city.

Lansing, May 31, 1911.—Inspection of the sewerage of the Hotel Schavey.

Mason, June 5, 1911.—Conference with the City Council relative to the disposal of sewage from the Court House, County Jail, and a number of private buildings.

Kent City, June 7-8, 1911.—Investigation relative to a nuisance from the improper disposal of sewage from the Hotel and Cheese Factory.

Ingham Township, June 20, 1911.—Conference with the Board of Supervisors relative to the disposal of sewage from the Ingham County Infirmary.

Carson City, June 21-22, 1911.—Inspection of the schoolhouse; examination of plans for a new system of warming and ventilation for the schoolhouse; and inspection of a number of places in the village where insanitary conditions existed.

LABORATORY REPORT FOR THE FISCAL YEAR ENDING JUNE 30, 1911.

Dr. F. W. Shumway, Secretary State Board of Health:

Dear Doctor: I beg herewith to submit to you a report of the work of the laboratory for the fiscal year ending June 30, 1911.

The results of the work during the year have been very satisfactory in every respect and the number of samples submitted for examination have continued to increase as shown in the following table:

SUMMARY OF EXAMINATIONS FOR YEAR ENDING JUNE 30, 1811, COMPARED WITH SUMMARY OF EXAMINATIONS FOR YEAR ENDING JUNE 30, 1910.

	1911.	1910.
Total number of examinations	3,699	2,602
Chemical and bacteriological examinations of water for potability	401	296
Sputa and other discharges examined for tubercle bacilli	1,877	1,282
Throat swabs examined for diphtheria bacilli	513	537
Blood samples examined for Widal's reaction	385	181
Chemical and microscopical examinations of urine	166	72
Pathological examinations of feces	5	12
Pathological examinations of tumors	13	12
Miscellaneous blood examinations	63	22
Chemical and bacteriological examinations of milk	23	21
Examinations for venereal disease	66	43
Toxicological and Medico-legal examinations	15	23
Other miscellaneous examinations	171	125

This table shows that the growth has been fairly uniform and has affected almost all classes of material. The arrangement of examinations by months shows clearly the tendency toward a general increase in the number of samples received and examined.

SUMMARY OF EXAMINATIONS ARRANGED BY MONTHS.

Month.	Waters.		Sputa. Tuberculosis.		Throat Swabs. Diphtheria.		Blood. Widal's Reaction.		Miscellaneous.	Total.
	Safe.	Unsafe.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.		
July, 1910	13	6	43	91	9	30	8	15	63	278
August, 1910	12	19	42	78	22	14	15	25	49	276
September, 1910	10	25	36	81	9	15	19	32	35	262
October, 1910	22	30	24	83	22	28	20	31	33	293
November, 1910	15	19	25	78	14	38	14	29	38	270
December, 1910	16	15	27	77	12	43	7	10	42	249
January, 1911	12	13	45	108	8	34	11	14	39	284
February, 1911	9	28	34	127	14	34	8	15	45	314
March, 1911	13	15	46	178	7	43	4	16	50	372
April, 1911	11	23	39	168	14	36	11	22	43	367
May, 1911	23	15	58	166	12	23	6	23	55	381
June, 1911	15	22	89	134	15	17	5	25	31	353
Total	171	230	508	1,369	158	355	128	257	523	3,699

WATER EXAMINATIONS.

During the year, 401 samples of water were examined for potability, as compared with 296 in 1910. Of these, 57.3 per cent were found to be contaminated and unsafe for drinking purposes. It is interesting to note that the percentage of contaminated samples in 1910 was about 57, indicating that the relative proportion of safe and unsafe water samples received to be practically the same for the two years. The results from these examinations, however, cannot be taken to indicate that so high a percentage of all water supplies in the State are contaminated, because, with the exception of certain cities that submit water samples regularly as a sanitary precaution, most samples received have been submitted when there has been some reason for suspecting contamination, and comparatively few samples have been submitted from sources thought to be safe. We have further observed that when certain public water supplies have been found to be contaminated a considerable number of samples are often submitted until the condition is remedied, after which examinations are discontinued, leaving the proportion of contaminated samples from that locality relatively high.

The following table shows that in 1911 the 401 water samples examined were received from 112 different localities. In many instances the samples received have been from private wells or sources under investigation for special reasons, and does not refer to the public water supply; and no attempt should be made to apply the finding given in this table in determining whether or not the public water supply in any of the cities mentioned is or is not safe for drinking purposes.

SUMMARY OF WATER EXAMINATIONS FOR THE YEAR ENDING JUNE 30, 1911.

Localities.	Total examined.	Safe.	Unsafe.
Adair	1	0	1
Adrian	1	0	1
Akron	1	0	1
Alba	1	0	1
Allen	5	2	3
Almont	1	0	1
Alpena	3	0	3
Amasa	5	2	3
Athens	1	0	1
Baraga	1	0	1
Baroda	3	2	1
Bay City	6	2	4
Benton Harbor	51	29	22
Boyne City	1	1	0
Bronson	1	1	0
Buchanan	3	0	3
Burlington	1	1	0
Cadillac	2	0	2
Calumet	2	2	0
Camden	1	0	1
Caseville	1	0	1
Charlotte	1	0	1
Clarkston	1	0	1
Coleman	1	1	0
Durand	3	2	1
Edwardsburg	2	2	0
Elk Rapids	12	3	9
Escanaba	10	3	7
Flint	9	4	5
Frankenmuth	1	0	1
Galien	1	0	1
Ganges	2	0	2
Grand Ledge	2	1	1
Grand Rapids	4	0	4
Greenville	2	1	1
Hancock	3	1	2
Hanover	1	0	1
Harbor Beach	1	0	1
Harvey	1	1	0
Hastings	5	4	1
Hillsdale	3	1	2
Holland	1	0	1
Holt	1	1	0
Honor	1	1	0
Howell	2	2	0
Imlay City	2	0	2
Ionia	2	1	1
Iron Mountain	9	1	8
Iron River	1	1	0
Kalamazoo	5	2	3
Kalkaska	1	0	1
Laketon	2	1	1
Lake Odessa	7	2	5
Lakeside	1	1	0
Lansing	20	15	5
Lapeer	8	2	6
Lawton	1	0	1
Ludington	12	5	7
Lupton	2	0	2
Mackinac Island	2	1	1

Localities.	Total examined.	Safe.	Unsafe.
Marquette	28	16	12
Marshall	1	0	1
Mecosta	2	2	0
Melvin	3	0	3
Menominee	11	0	11
Middleville	1	0	1
Monroe	1	0	1
Mt. Clemens	1	1	0
Muir	1	0	1
Munising	3	1	2
Muskegon	7	6	1
Nahma	1	0	1
Nashville	3	2	1
New Boston	1	0	1
Oak Grove	1	0	1
Ontonagon	3	0	3
Ortonville	1	0	1
Owosso	1	1	0
Paw Paw	3	1	2
Pentwater	2	0	2
Pontiac	1	1	0
Port Huron	12	1	11
Potterville	2	0	2
Rapid City	1	0	1
Remus	1	0	1
Royal Oak	2	0	2
St. Clair	4	4	0
St. Johns	8	3	5
St. Joseph	1	1	0
St. Louis	6	4	2
Saline	1	0	1
Sault Ste. Marie	1	0	1
Sebewaing	2	0	2
Sherwood	1	0	1
South Haven	9	4	5
Sparta	2	2	0
Stambaugh	2	2	0
Sterling	1	0	1
Swartz Creek	2	0	2
Traverse City	18	7	11
Vandalia	1	1	0
Vassar	1	1	0
Vernon	1	0	1
Vulcan	1	0	1
Wallace	1	1	0
Wayne	2	2	0
Webberville	1	1	0
Westphalia	1	0	1
Whitehall	2	2	0
Whitmore Lake	1	0	1
Wyandotte	1	0	1
Zeeland	2	0	2

TUBERCULOSIS.

During the year, 1,877 samples of sputa were examined, as compared with 1,282 the previous year. The percentage of samples showing the presence of tubercle bacilli in 1911 was 27, as compared with 28% in 1910. A reference to the table showing examinations, arranged by months, will reveal a marked increase in the number of sputa received during the spring months of March, April and May. This increase in numbers submitted is usually followed by a decrease in the number submitted for June, with a relative increase in the number showing the presence of tubercle bacilli. This finding appears to be characteristic and may usually be observed in the results from different laboratories. Several theoretic explanations may be offered for such results and as many good arguments will apparently bear them out. But the most important conclusion to be drawn is that an increased amount of tuberculosis follows the winter confinement and many of such cases are not discovered until the cough lingers into June and arouses suspicion.

SUMMARY OF SPUTA EXAMINATIONS.

Total number of sputa examined for tubercle bacilli		1,877
Total number positive	508	
Total number negative	1,369	

Other organisms associated with tubercle bacilli in sputa:

Streptocci, 34.
Staphylococci, 10.
Pneumococci, 101.
B. Influenza, 23.
Micrococcus Catarrhalis, 8.
Leptothrix, Buccalis, 1.
Other organisms absent or not identified, 330.

Other organisms predominating where tubercle bacilli were absent:

Streptococci, 84.
Staphylococci, 39.
Pneumococci, 424.
B. Influenza, 248.
Leptothrix, 4.
Micrococcus Catarrhalis, 32.
Bacillus Fusiformis, 3.
B. Coli, 6.
Other organisms absent or not identified, 540.

DIPHTHERIA.

During the year, 513 throat swabs were examined for diphtheria, as compared with 537 during the previous year. Of these, 405 were for diagnosis and 108 for release from quarantine. The reduced number of swabs examined is accounted for by reason of there being less diphtheria in the State than during the previous year.

SUMMARY OF THROAT SWABS EXAMINED.

Total number of throat swabs examined		513
Total number showing B. Diphtheria	158	
Total number showing absence of B. Diphtheria	355	

Total number of throat swabs examined for release from quarantine		108
Total number showing B. Diphtheria present	39	
Total number showing B. Diphtheria absent	69	
Total number of throat swabs examined for diagnosis		405
Total number showing B. Diphtheria present	119	
Total number showing B. Diphtheria absent	286	
Total number of throat swabs examined from cases where previous diagnosis of diphtheria had been made from clinical findings		113
Total number showing B. Diphtheria present	49	
Total number showing B. Diphtheria absent	64	
Per cent of cases of clinical diphtheria not caused by B. Diphtheria		56
Total number of throat swabs examined where clinical diagnosis was regarded as questionable		165
Total number showing B. Diphtheria present	39	
Total number showing B. Diphtheria absent	126	
Per cent of questionable cases found to be diphtheria		24
Total number of throat swabs examined from cases where previous diagnosis other than diphtheria had been made		113
Total number showing B. Diphtheria present	30	
Total number showing B Diphtheria absent	83	
Per cent found to be diphtheria		26

Other organisms identified when associated with B. Diphtheria in swabs examined for diagnosis:

Staphylococci, 7.
Bacillus Fusiformis, 18.
Pneumococci, 24.
Bacillus Influenza, 2.
Saccharomyces Albicans, 1.

Other organisms found to predominate in cases that were considered diphtheria clinically but were not diphtheria bacteriologically:

	Swab.	Culture.
Streptococci	3	5
Staphylococci	12	38
Pneumococci	23	15
Micrococcus Catarrhalis	3	2
Bacillus Fusiformis	18	0
Bacillus Mucosus Capsulatus	0	2
Hofmann's Bacilli	0	1
Leptothrix Buccalis	1	0
Saccharomyces Albicans	0	1
Unidentified	4	0

Bacillus Fusiformis was found to predominate in direct smear from the swabs 90 times. The cultures from these smears showed the following:

Streptococci, 6.
Staphylococci, 42.
Bacillus Diphtheria, 18.
Micrococcus Catarrhalis, 1.
Pneumococci, 15.
Bacillus Coli, 2.
Bacillus Mucosus Capsulatus, 3.
Saccharomyces Albicans, 2.
Bacillus Influenza, 1.

Organisms found to predominate in negative cases of suspected diphtheria:

	Swab.	Culture.
Streptococci	6	23
Staphylococci	46	159
Pneumococci	77	67
Micrococcus Catarrhalis	10	11
Bacillus Influenza	26	0
Bacillus Fusiformis	72	0
Bacillus Coli	0	1
Leptothrix Buccalis	1	0
Saccharomyces Albicans	1	5
Bacillus Mucosus Capsulatus	0	8
Bacillus Coryzae Segmentosus	0	1
No organisms present or not identified	47	12

Attention is directed to the comparative number of diphtheria swabs examined for diagnosis and for release from quarantine. These figures indicate that the laboratory is used by physicians more as a private aid in diagnosis than for the protection of the public. When diphtheria is prevalent in a community the tendency has been to ignore the most important sources of contagion and pursue the sources of lesser importance with excessive vigor. The prophylaxis of diphtheria should be directed against the carrier rather than the premises in which the case has occurred. A vast majority of diphtheria cases are the result of contact either directly or indirectly with persons carrying the infection, and until it has been ascertained that a given individual is not carrying the germs of diphtheria, fumigation and disinfection of the premises is of relatively little value. The general intelligence of the public tends, in a measure at least, to afford protection against infection from persons sick with diphtheria, and it is the special duty of the health officers and public spirited physicians to assist in limiting the spread of diphtheria from the well. A study of the accompanying table indicates that diphtheria cannot be diagnosed, in average cases, from clinical findings with any degree of certainty; nevertheless, cases do occur where the clinician's diagnosis may be reasonably sure. However, in releasing patients from whatever precautions were observed during the disease there is no method, aside from the culture tube and the microscope, that will determine whether or not the recovered case is harboring infection and might be a dangerous spreader of diphtheria.

Our laboratory data on cases examined for release is not yet sufficient to merit detailed study. The records show some cases where diphtheria bacilli have disappeared within a few days after the disappearance of the membrane and others where they have remained for many months. There is no time limit of quarantine in diphtheria that can be safe and just. Prophylactic measures should be continued while B. Diphtheria are present, which can be determined only by bacteriological examination.

Respectfully submitted,
M. L. HOLM, M. D.,
Bacteriologist.

PUBLIC HEALTH LEGISLATION IN MICHIGAN IN 1911.

During the legislative session of 1911, the following public health acts were passed and approved.

ACT NO. 49, PUBLIC ACTS OF 1911.

AN ACT to amend section one of act number two hundred thirty of the public acts of eighteen hundred eighty-five, entitled "An act to provide for the prevention of the introduction and spread of cholera and other dangerous communicable diseases," approved June twentieth, eighteen hundred eighty-five, the same being compiler's section four thousand four hundred seventy-seven of the Compiled Laws of eighteen hundred ninety-seven.

The People of the State of Michigan enact:

Section 1. Section one of act number two hundred thirty of the public acts of eighteen hundred eighty-five, entitled "An act to provide for the prevention of the introduction and spread of cholera and other dangerous communicable diseases," approved June twentieth, eighteen hundred eighty-five, the same being compiler's section four thousand four hundred seventy-seven of the Compiled Laws of eighteen hundred ninety-seven, is hereby amended to read as follows:

Sec. 1. Whenever it shall be shown to the satisfaction of the State Board of Health, that cholera, diphtheria, or other dangerous communicable disease exists in any foreign country, neighboring state, or locality within this State whereby the public health is imperiled, and it shall be further shown that immigrants, passengers or other persons seeking to enter this State or to travel from place to place within this State, are coming from any locality where such dangerous communicable disease exists, the State Board of Health shall be authorized to establish a system of quarantine for the State of Michigan and the Governor shall have authority to order the State militia to any section of the State on request of the State Board of Health to enforce such quarantine.

Approved April 7, 1911.

ACT NO. 56, PUBLIC ACTS OF 1911.

AN ACT to prohibit the sale of certain pistols and explosives, and the regulation relative to fireworks and firecrackers.

The People of the State of Michigan enact:

Section 1. It shall be unlawful for any person to sell or keep for sale any blank cartridge, toy pistol, toy gun or toy cannon that can be used to fire a blank cartridge; or to sell or keep for sale, or to fire, explode or cause to explode any blank cartridge or bomb; or to sell or keep for sale, or to set off, explode or cause to explode any fireworks containing any picric acid or picrates, or substance of a like nature, or any firecracker exceeding two inches in length and three-eighths of an inch in diameter or of a greater explosive power than a firecracker of such size containing black powder only: Provided, That this section shall not apply to illuminating fireworks set off between the hours of seven o'clock on the afternoon and twelve o'clock midnight, excepting those containing picric acid or picrates, or substances of a like nature, or to the sale of any article herein named to be shipped directly out of the State, or to the sale or use of explosives in the firing of salutes by official authorities, or to the sale or use of blank cartridges for a show or theatre, or for signal purposes in athletic sports or by railroads, or to experiments at any factory for the manufacture of explosives, or the firing of salutes with cannon on shore or on boats, or to the sale for use or the use by the militia or by any organization of war veterans, or in teaching the use of firearms by experts on days other than holidays.

Sec. 2. Whoever violates any provision of this act shall be punished by a fine not exceeding one hundred dollars or by imprisonment for not more than thirty days, or by both such fine and imprisonment in the discretion of the court.

Approved April 7, 1911.

ACT NO. 62, PUBLIC ACTS OF 1911.

AN ACT to prohibit certain classes of immoral advertising and provide punishment for violators thereof.

The People of the State of Michigan enact:

Section 1. Any person who shall advertise in his own name or the name of another person, firm or pretended firm, association, corporation or pretended corporation, in any newspaper, pamphlet, circular, periodical or other written or printed paper, or the owner, publisher or manager of any newspaper or periodical who shall permit to be published or inserted in any newspaper or periodical owned or controlled by him, an advertisement of the treating or curing of venereal diseases, the restoration of "Lost manhood" or "Lost vitality or vigor," or shall advertise in any manner that he is a specialist in diseases of the sexual organs, or diseases caused by sexual vice, self-abuse, or in any diseases of like cause, or shall advertise in any manner any medicine, drug, compound, appliance or any means whatever whereby sexual diseases of men or women may be cured or relieved, or miscarriage or abortion produced, shall be guilty of a misdemeanor and upon conviction thereof shall be punished by a fine of not less than fifty dollars nor more than five hundred dollars, or by imprisonment in the county jail for not more than six months, or both in the discretion of the court.

Sec. 2. Any person publishing, distributing or causing to be distributed or circulated any of the advertising matter hereinbefore described, either in newspaper or other printed or written forms, shall be guilty of a misdemeanor as noted in section one and punished as therein described: Provided, That this act shall not be construed as creating a penalty in addition to that specified in act number two hundred thirty-seven, of the public acts of eighteen hundred ninety-seven, as amended by act number one hundred sixty-four of the public acts of nineteen hundred seven, for the acts made unlawful therein.

Sec. 3. It is further enacted that any advertisement found in any newspaper, pamphlet or circular containing the words "Lost manhood," "Lost vitality or vigor," or other expressions synonymous therewith, shall be prima facie evidence of the guilt of the party or parties subscribing to the said advertisements, their agents or representatives, and the same penalties shall apply to the publishers of papers containing the same as prescribed in section one.

Approved April 12, 1911.

ACT NO. 80, PUBLIC ACTS OF 1911.

AN ACT to amend act number twenty-seven of the public acts of nineteen hundred nine, as amended by act number three hundred seventeen of the public acts of nineteen hundred nine, entitled "An act defining the powers and duties of local health officers and boards of health in the matter of the protection of the people of the State of Michigan from the disease known as tuberculosis," by adding a new section thereto to be known as section twelve-a.

The People of the State of Michigan enact:

Section 1. Act number twenty-seven of the public acts of nineteen hundred nine, as amended by act number three hundred seventeen of the public acts of nineteen hundred nine, entitled "An act defining the powers and duties of local health officers and boards of health in the matter of the protection of the people of the State of Michigan from the disease known as tuberculosis," is hereby amended by adding a new section thereto to be known as section twelve-a, and to read as follows:

Sec. 12a. In addition to the requirements of the reports hereinbefore provided, such reports shall comprehend the occupation at the time disease was contracted and the date thereof, as near as can be, the time thereafter continued at such occupation and all subsequent occupations and term of each to the time of the death or recovery of any person having tuberculosis, and it shall be the duty of every health officer of township or village or city to cause all reports to be made in accordance with the first section of this act, and this section and record copy transmitted as required by section four, and upon the receipt of the full quarterly report by the State Board of Health, said State Board of Health shall compile such report to show the number and location of each case, the number of deaths and number of recoveries, the age, sex, color, occupation at time person contracted the disease, the time continued in the occupation when disease was contracted and all subsequent occupations and term of each up to death or recovery of such person, and so classify same, showing percentage of deaths in each trade or occupation from tuberculosis, as compared with the whole number of deaths in such trade or occupation as shown by the latest reports of local physicians to the local health boards as reported to the State Board of Health: Provided, That such compilation shall be published once every year in the reports of said State Board of Health; that such reports so made up shall be at all times open to the inspection of the public: Provided further, That the names of the persons so diseased shall not be published.

Approved April 13, 1911.

ACT NO. 106, PUBLIC ACTS OF 1911.

AN ACT to amend sections two and three of act number one hundred five of the public acts of nineteen hundred one, entitled "An act to prohibit the conducting, establishing or maintaining, or carrying on without a license, of any maternity hospital, lying-in asylum or other place for the receiving, caring for or treating of females during pregnancy, or during or after delivery, and to provide for the licensing and regulation of the same," and to repeal section five of the same act.

The People of the State of Michigan enact:

Section 1. Sections two and three of act number one hundred five of the public acts of nineteen hundred one, entitled "An act to prohibit the conducting, establishing or maintaining or carrying on without a license, of any maternity hospital, lying-in asylum, or other place for the receiving, caring for or treating of females during pregnancy, or during or after delivery, and to provide for the licensing and regulation of the same," are hereby amended to read as follows:

Sec. 2. The board of health of any incorporated city or incorporated village within this State is hereby authorized to grant such licenses to conduct, establish, maintain or carry on any maternity hospital, lying-in asylum, or other place as aforesaid, at any place within the corporate limits of such city or incorporated village; and the board of health of any township within this State is hereby authorized to grant such licenses to conduct, establish, maintain or carry on any maternity hospital, lying-in asylum, or other place as aforesaid, at any place within the limits of such township outside of the corporate limits of any city or incorporated village. It shall be the duty of such boards of health to furnish the State Board of Corrections and Charities, as soon as this law becomes operative, with the names and locations of all maternity or lying-in hospitals which are at that time engaged in business, and thereafter immediately upon the issuance of a license for the establishment of such institution, it shall be the duty of the board of health to notify the State Board of Corrections and Charities in regard thereto.

Sec. 3. The person or persons desiring to obtain such license shall first file with such board of health a written application endorsed by six or more persons of good moral character who are resident tax-payers of the county where such maternity hospital, lying-in asylum or other place is to be located, and who shall certify to the respectability of the applicant, and that such hospital, asylum or other place shall only be used for legitimate, moral and charitable purposes. If after due inquiry such board of health is satisfied that the applicant is a proper person and the premises are suitably and properly arranged for such purpose, the said board of health shall grant a license for the purpose or purposes above mentioned upon the payment of a fee of five dollars, which said amount shall be paid by said board into the city or incorporated village or township treasury. Such license shall continue in force for a period of one year, subject, however, to be revoked by the board of health granting the same, upon the violation of the rules and regulations enacted by the said board of health for the government of such hospitals or asylums as aforesaid. Every such license shall specify the name and residence of the person or persons so undertaking the care of such females, and the place and the number of females thereby allowed to be received or kept therein. Every person so licensed shall keep a register wherein he shall enter the full names and addresses of each person admitted, the date of admission, the date of birth of every child born on said premises, and the names and residences of their parents so far as known, and also a correct register of the name and age of every child who is given out, adopted, taken away or indentured from such place to or by any person, together with the name and residence of the person or persons so adopting, taking or indenturing such child, and shall cause a correct copy of such register to be sent to the judge of probate of the county wherein such institution is located within forty-eight hours after such child is so given out, adopted, taken away or indentured, and in no case shall any child be placed in any home by indenture, adoption, on trial or otherwise by any such institution without the written approval of such home by the county agent of the county in which the child is place having first been filed with the probate judge of said county. The said agent shall receive as compensation for his services under this act the sum of three dollars for each day actually and necessarily spent, together with his actual and necessary expenses. The bill for the same shall specify the time spent, manner of travel, miles traveled and each item of expense incurred, and shall be certified by the institution ordering such service, approved by the probate judge with whom the report is filed, and after audit by the Board of State Auditors shall be paid from the general fund. Such hospital, lying-in asylum or other place and its records shall be subject to the visitation and inspection at any reasonable time by the board of health issuing such license, any member or the secretary of the State Board of Corrections and Charities or by the principal agent of any duly incorporated society for the prevention of cruelty to children. Such records shall be accessible only to such boards of health, members and the secretary of the State Board of Corrections and Charities and to such principal agent, and no person having access to these records shall divulge or disclose the contents of the records or the particulars entered therein, and said records shall not be used in evidence in any civil or criminal action for or against any inmate of said institution herein named.

Sec. 2. Section five of act number one hundred five of the public acts of nineteen hundred one is hereby repealed.

Approved April 20, 1911.

ACT NO. 108, PUBLIC ACTS OF 1911.

AN ACT to amend sections eight and seventeen of act number two hundred fifty-four of the public acts of nineteen hundred five, entitled "An act to establish a State Sanatorium in some suitable locality in Michigan for the care and treatment of persons having tuberculosis and making appropriations therefor, and to provide a tax to meet the same."

The People of the State of Michigan enact:

Section 1. Section seventeen of act number two hundred fifty-four of the public acts of nineteen hundred five, entitled "An act to establish a State Sanatorium in some suitable locality in Michigan for the care and treatment of persons having tuberculosis and making appropriations therefor, and to provide a tax to meet the same," is hereby amended to read as follows:

Sec. 17. Any superintendent of the poor in any county of this State may send or cause to be sent with the approval of the judge of probate of said county, to the State sanatorium any person who, under the rules of the sanatorium, is entitled to admission therein, who is a charge upon the county. Before sending any patient to the sanatorium, under the provisions of this act, such superintendent of the poor shall correspond with the superintendent of the sanatorium and conform to the rules established by the board of trustees, and he shall cause the patient to be comfortably clothed, and shall provide the patient with suitable clothing while the patient remains at the sanatorium, and shall defray the necessary traveling expenses in going to and returning therefrom, and provide the patient with such articles of necessity and convenience as are required by the rules of the sanatorium: Provided, That any moneys that shall be paid into the hands of the superintendent of the poor or the county treasurer of any county, to reimburse in whole or in part, for the maintenance of any patient sent to said sanatorium as a patient of the first class as provided by section fifteen of this act, shall within thirty days after the receipt thereof be forwarded by such superintendent of the poor or county treasurer, as the case may be, to the Auditor General, and the Auditor General shall credit the same upon the cost of maintenance of said patient at said sanatorium.

Approved April 20, 1911.

ACT NO. 115, PUBLIC ACTS OF 1911.

AN ACT making appropriations for the State Tuberculosis Sanatorium for current expenses and for building and special purposes for the fiscal years ending June thirty, nineteen hundred twelve, and June thirty, nineteen hundred thirteen, and to provide a tax to meet the same.

The People of the State of Michigan enact:

Section 1. There is hereby appropriated for current expenses for the State Tuberculosis Sanatorium for the fiscal year ending June thirty, nineteen hundred twelve, the sum of fifteen thousand six hundred eighty-four dollars, and for the fiscal year ending June thirty, nineteen hundred thirteen, the sum of seventeen thousand eight hundred seventy-six dollars.

Sec. 2. The further sum of thirty-one thousand two hundred fifty-five dollars is hereby appropriated for the fiscal year ending June thirty, nineteen hundred twelve, for purposes and in amounts as follows: For constructing and furnishing one infirmary wing, thirteen thousand dollars; kitchen extension, seven thousand dollars; milk house, and to build two silos, two thousand dollars; horses and harnesses, three hundred fifty dollars; farm implements, five hundred fifty-five dollars; new filter bed, one thousand dollars; drain across Mr. Drew's farm, one thousand three hundred dollars; new hot water heater, three hundred dollars; porches and ventilators for shacks, seven hundred fifty dollars; telephone installation, two hundred dollars; grading and new roads, one thousand dollars; sidewalks, five hundred dollars; incinerator, one thousand two hundred dollars; building porch and remodeling superintendent's quarters, one thousand dollars; office furnishings, two hundred dollars; special printing, two hundred dollars; purchasing a piano, three hundred fifty dollars; furnishings for help's dining room, two hundred and fifty dollars; and for fire protection, one hundred dollars: Provided, That if the amount designated in this section for any one of the purposes stated be insufficient to complete the work or purchase, any surplus remaining after the completion of the other work or purchase specified in this section may, by obtaining the consent of the State Board of Corrections and Charities and Auditor General in writing before any expense in excess of the specific appropriation is incurred, be used in the account or accounts where such deficiency seems unavoidable, the intent of this proviso being to make the entire thirty-one thousand two hundred fifty-five dollars available for the purposes stated herein if in the judgment of the State Board of Corrections and Charities and Auditor General it is deemed advisable to make the transfers for which provision is hereby made.

Sec. 3. The several sums appropriated by the provisions of this act shall be paid out of the State treasury to the treasurer of the State Tuberculosis Sanatorium at such time and in such amounts as the general accounting laws of the State prescribe, and the disbursing officer shall render his account to the Auditor General thereunder.

Sec. 4. The Auditor General shall incorporate in the State tax for the year nineteen hundred eleven the sum of forty-six thousand nine hundred thirty-nine dollars, and for the year nineteen hundred twelve the sum of seventeen thousand eight hundred seventy-six dollars, which, when collected, shall be credited to the general fund to reimburse the same for the money hereby appropriated.

This act is ordered to take immediate effect.

Approved April 25, 1911.

ACT NO. 119, PUBLIC ACTS OF 1911.

AN ACT to provide for the reporting of occupational diseases by physicians.

The People of the State of Michigan enact:

Section 1. Every physician attending or called upon to treat a patient whom he believes to be suffering from poisoning from lead, phosphorus, arsenic or mercury, or their compounds, or from anthrax, or from compressed air illness, contracted as a result of the nature of the patient's employment, shall send to the State Board of Health, who shall transmit to the Commissioner of Labor a notice stating the name, postoffice address and place of employment of the patient, the length of time of such employment, and the disease from which in the opinion of the physician, the patient is suffering.

Sec. 2. Any physician who shall fail to make any report required by the preceding section, or who shall wilfully make any false statement in such report, shall be deemed guilty of a misdemeanor and on conviction thereof shall be punished by a fine of not more than fifty dollars.

Sec. 3. It shall be the duty of the Commissioner of Labor and of the prosecuting attorney of the county where any one violating the provisions of this act may reside, to prosecute all violations of the provisions of this act which shall come to the knowledge of them or either of them.

Approved April 25, 1911.

ACT NO. 208, PUBLIC ACTS OF 1911.

AN ACT to permit the use of county drains for sewage disposal.

The People of the State of Michigan enact:

Section 1. Any county drain may be used for sewage disposal by any city, village or township for which it shall be available, but shall be kept cleaned out or enlarged as the county drain commissioner shall determine to be necessary for the carrying off of the sewage and the natural flow of said drain at the expense of the city, village or township using the same, and if used by more than one, the expense to be borne by each shall be determined by the board of supervisors.

Approved, April 28, 1911.

ACT NO. 248, PUBLIC ACTS OF 1911.

AN ACT providing for the incorporation of medical milk commissions, and certification of milk produced under their supervision.

The People of the State of Michigan enact:

Section 1. Authority is hereby given the board of health of any city, village or township in this State, so constituted as to have in its membership two or more physicians duly authorized to practice medicine under the laws of this State, to appoint five physicians duly authorized to practice medicine under the laws of this State a medical milk commission for the purpose of supervising the production, transportation and delivery of milk, which it is intended to use for infant feeding, sick-room clinical purposes in said city, village or township. In cities, villages or townships not having a board of health so constituted as above stated, the State Board of Health may make such appointment. All members of such milk commission shall have and possess all the powers and immunities provided by this act or any other act relating to the appointees of such board of health, while performing their duties as such appointees. One member of such commission shall be appointed and hold office from the time of such appointment until the end of the thirty-first of December, nineteen hundred eleven, one shall be appointed and hold office until the end of the thirty-first of December nineteen hundred twelve, one shall be appointed and hold office until the end of the thirty-first of December nineteen hundred thirteen, and one shall be appointed and hold office until the end of the thirty-first of December, nineteen hundred fourteen, one shall be appointed and hold office until the end of the thirty-first of December, nineteen hundred fifteen, and until their several successors are appointed and qualified. The term of office of each member of the commission, after the termination of the aforesaid terms shall be five years, and on the expiration of any term a new appointment shall be made in the same manner above prescribed. No more than one milk commission shall be appointed for any one city, village or township. Any and all members of such commission may be removed at any time by the board which appointed them. Such medical milk commission shall make and file a certificate in writing in the manner hereinafter mentioned.

Sec. 2. Such certificate shall set forth:

The name of such association which shall be as hereinafter designated;

The purpose for which the association shall be formed;

The names and residences of the medical directors who shall manage the affairs of the association for the first year of its existence;

The county in this State where such association shall operate.

Sec. 3. Such certificate shall be executed in triplicate and asknowledged before some person within this State authorized to take the acknowledgment of deeds, and one copy thereof shall be filed in the office of the clerk of the county where the purposes of such association are to be carried out and one copy shall be filed in the office of the Secretary of State; said certificate or copy thereof duly certified by the said clerk or Secretary of State shall be evidence in all courts or places.

Sec. 4. The name of such association shall be "The medical milk commission of .... (designating name of county) county, of Michigan," and in case more than one association shall be organized under this act or otherwise in any county, such subsequent association or associations shall use the name designated herein, but shall indicate in such name its proper sequence in origination or incorporation by adding thereto the words: "number two," "number three," "number four," or as the case may be.

Sec. 5. Such medical directors shall have the power from time to time to make, alter and amend by-laws not inconsistent with the constitution and laws of the United States and of this State, and to appoint such agents and officers as shall in their judgment tend to promote or advance any purpose or purposes of such commission, and to prescribe their respective duties; and for the regulating of the conditions under which milk shall be produced by any dairyman or dairymen under contract with such commission.

Sec. 6. No medical director of any association organized under this act shall receive, directly or indirectly, from such association or dairyman or dairymen producing milk under agreement with such commission, any salary or emolument or any compensation of any kind or character for any services rendered under the provisions of this act, and any medical director who shall receive any salary, emolument or any compensation of any kind or character for such services, shall be liable to a penalty of one hundred dollars to be recovered in an action of debt by the association of which he is a member, and in addition thereto shall be removed from his office as a member of said association, and thereafter disqualified from becoming a member of any association incorporated under the provisions of this act.

Sec. 7. Every such association shall have the power to enter into agreement in writing with any dairyman or dairymen for the production of milk under the supervision of such association for the purposes enumerated in section one hereof, and to prescribe in such agreement the conditions under which such milk shall be produced, which conditions however, shall not be below the standards of purity and quality for certified milk as fixed by the American association of medical milk commissions, and the standards for milk now fixed or that may hereafter be fixed by the Board of Health of the State of Michigan. In any contract entered into by any such commission with any dairyman or dairymen, it may be provided that such medical milk commission may designate any analysts, chemists, bacteriologists, veterinarians, medical inspectors or other persons who in its judgment may be necessary for the proper carrying out of the purposes of such commission for employment by such dairyman or dairymen, and to prescribe and define their powers and duties, and that such persons so employed by such dairyman or dairymen may be discharged from employment whenever such medical milk commission may request such discharge or removal in writing.

Sec. 8. All containers of any kind or character used in the carrying or distribution of milk produced by any dairyman or dairymen under contract with any medical milk commission shall have attached thereto or placed thereon a certificate or seal bearing the name of the medical milk commission with which such dairyman or dairymen producing such milk shall be under contract, which certificate shall have printed, stamped or written thereon the day or date of the production of the milk contained in any such container and the words "certified milk" in plain and legible form.

Sec. 9. The work and methods of any milk commission organized under this act and of the dairies of which milk is produced under contract with any such commission, shall at all times be subject to investigation and scrutiny by the local board of health and the Board of Health of the State of Michigan. The secretary of said State Board of Health and the local health officer shall be ex-officio members of every milk commission organized under this act.

Sec. 10. No person, firm or corporation shall sell or exchange or offer or expose for sale or exchange in any county, as and for certified milk any milk which is not certified by the medical milk commission of that county and which is not produced in conformity with the methods and regulations for the production of certified milk from time to time adopted by the American association of medical milk commissions, and which is below the standards of purity and quality for certified milk as fixed by the American association of medical milk commissions.

Sec. 11. Whoever shall by himself, servant or agent sell, exchange or deliver or have in his custody with intent to sell, exchange or deliver or offer or expose for sale in any county as "certified milk" any milk which has not been certified by the medical milk commission that county or shall violate any of the provisions of this act, shall upon conviction thereof be deemed guilty of a misdemeanor, and shall be punished by a fine of not less than fifty dollars nor more than five hundred dollars or by imprisonment in the county jail not more than ninety days or by both such fine and imprisonment in the discretion of the court.

Sec. 12. All acts or parts of acts inconsistent with the provisions of this act are hereby repealed.

Approved, May 1, 1911.

ACT NO. 257, PUBLIC ACTS OF 1911.

AN ACT to prohibit drivers of milk wagons and unauthorized persons from opening milk bottles, or in any way interfering with or molesting the caps or covers thereof after such bottles shall have been closed at the creamery, and during and after the process of delivery to patrons.

The People of the State of Michigan enact:

Section 1. From and after the date on which this act takes effect, it shall be unlawful for any driver of any milk wagon, or any distributor of milk, or any person whatsoever, except legally authorized milk inspectors and persons to whom such milk is delivered, to open milk bottles or in any way interfere with or molest the caps or covers of the same after such milk bottles shall have been closed at the creamery, or during the process of the delivery of said milk, or after said milk shall have been delivered in due course of business and in the ordinary manner.

Sec. 2. Any person violating any of the provisions of this act shall be deemed guilty of a misdemeanor, and upon conviction thereof in a court of competent jurisdiction shall be punished by a fine of not less than fifty dollars nor more than one hundred dollars, or by imprisonment in the county jail for not less than thirty days nor more than ninety days, or by both such fine and imprisonment in the discretion of the court.

Approved, May 1, 1911.

ACT NO. 270, PUBLIC ACTS OF 1911.

AN ACT to regulate the sale of poison and poisonous substances in this State.

The People of the State of Michigan enact:

Section 1. It shall be unlawful after November first, Anno Domini nineteen hundred eleven, for any person, firm or corporation doing a retail or wholesome business or any agent, clerk or employe to sell or dispose of, or offer to sell or deliver to any person any poison or any substance generally denominated as poisonous, unless the cork or stopper of the bottle or receptacle containing such poison or poisonous substance shall have fitted thereon a wood, celluloid, glass or metal disc, with serrated edge sufficient to call attention to the fact, either in daylight or in darkness, that the contents of the bottle or receptacle, the stopper or cork of which is fitted with such device, contains poison or poisonous substances. The words "poison" or "poisonous substances" as used in this act shall be construed to include only the poison or poisonous substances referred to and included within the terms of the schedules and language of section twenty-three of act number three hundred thirty-two of the public acts of nineteen hundred five. It shall be the duty of the State Board of Health, within thirty days after this act shall take effect, to approve of such a device or appliance as shall meet the requirements of this act and a sample thereof shall be kept in its office in the City of Lansing. The said State Board of Health shall immediately after the approval of such device or appliance, forward to every wholesome or retail druggist in this State, or to any other person upon request, a sample of the device or appliance so approved. The cost of all samples of such devices and appliances so approved by the State Board of Health, and by this act required to be furnished or issued by the State Board of Health, together with the cost of delivering same, shall be paid by the Board of State Auditors out of the general fund in the State treasury, on presentation of vouchers approved by the secretary of the State Board of Health. It shall be unlawful for any person, firm or corporation, or employe, agent or clerk, to use, authorize or cause to be used upon such cork or stopper any appliance or device unless same has received the approval of the State Board of Health, or to use, authorize or cause to be used any such appliance or device above mentioned on any other bottle or receptacle than those herein above provided for. Any person violating the provisions of this act shall upon conviction thereof be punished by imprisonment not less than three months nor more than one year, or by a fine not less than ninety dollars, or not to exceed three hundred dollars, or both such fine and imprisonment in the discretion of the court: Provided, That each such sale or delivery contrary to the provisions of this act, shall constitute a separate offense: Provided, That nothing in this act shall apply to poisons sold in packages or receptacles not fitted with a cork or stopper.

Approved, May 1, 1911.

FINANCIAL STATEMENT.

TOTAL AMOUNT AND CLASSIFICATION OF EXPENDITURES BY THE STATE BOARD OF HEALTH (UNDER PUBLIC ACT NO. 18 OF 1905), DURING THE FISCAL YEAR ENDING JUNE 30, 1911.

Expenses of members:	
Attending regular meetings	$91 84
Other expenses	114 61
Engraving, drawing, etc.	28 18
Instruments and books	190 78
Paper, stationery, etc.	1,959 84
Postage	950 00
Printing and binding	2,955 86
Secretary	2,500 00
Miscellaneous	207 47
Total	$8,998 58

NOTE.—The appropriation ($9,000.00) at the disposal of the State Board of Health for certain specified purposes, does not include clerk hire. The account of the appropriation ($10,000.00) for clerk hire is kept in the Auditor General's department, and is published in his annual report.

Respectfully submitted,
F. W. SHUMWAY, M. D.,
Secretary.

TOTAL AMOUNT AND CLASSIFICATION OF EXPENDITURES BY THE STATE BOARD OF HEALTH (UNDER SECTION 7 OF ACT 132, LAWS OF 1903, AS AMENDED BY ACT 151, LAWS OF 1907), EMBALMERS' FUND, AS ALLOWED DURING THE FISCAL YEAR, 1911.

RECEIPTS.		DISBURSEMENTS.	
Fees from applicants for licenses and for renewals of licenses	$1,209 00	Expenses of members attending meetings	$369 97
		Paper, stationery, etc.	19 27
		Postage	150 00
Total receipts	$1,209 00	Printing and binding	106 04
		Drawing, engraving, etc.	20 58
		Compensation of extra clerks.	384 85
		Miscellaneous	141 73
		Unexpended balance, turned over to State Treasurer	16 56
		Total disbursements	$1,209 00

Approved: (July 25, 1912),
F. W. SHUMWAY, M. D.,
Secretary.

TOTAL AMOUNT AND CLASSIFICATION OF EXPENDITURES BY THE STATE BOARD OF HEALTH, LABORATORY DEPARTMENT, (UNDER SECTION 5 OF ACT 122, LAWS OF 1909), AS ALLOWED DURING THE FISCAL YEAR ENDING JUNE 30, 1911.

RECEIPTS.		DISBURSEMENTS.	
State Treasurer, by appropriation	$5,000 00	Salaries of bacteriologist and assistant	$3,158 41
Fees for chemical, bacteriological and toxicological examinations	309 50	Salaries of clerks	1,233 70
		Postage	62 00
		Freight and express	8 91
		Books	96 28
		Laboratory supplies	748 57
		Unexpended balance, turned over to State Treasurer	1 63
Total receipts	$5,309 50	Total disbursements	$5,309 50

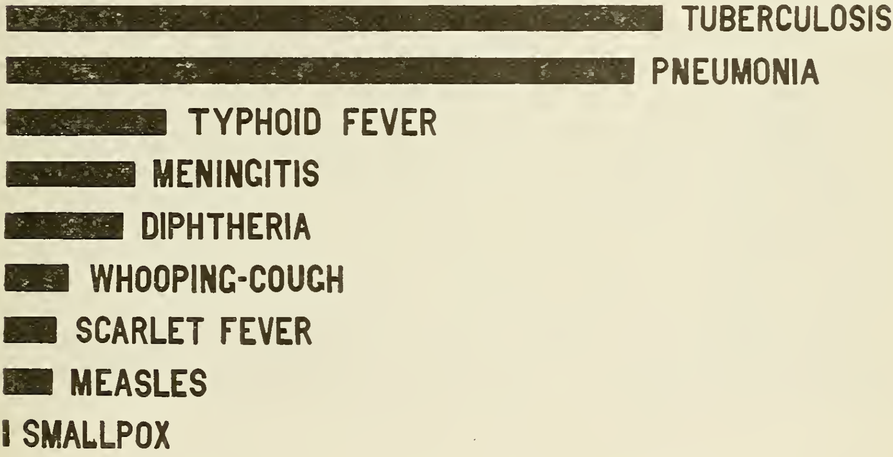
PART II.

COMMUNICABLE DISEASES IN MICHIGAN DURING THE YEAR ENDING DECEMBER 31, 1910, AND PRECEDING YEARS.

INTRODUCTION.

This article is the thirtieth in a series upon the same general subject, begun in 1882. It presents a summary of the compilations of the reports received from health officers relative to certain communicable diseases in Michigan during the year 1910, together with a review of some of the information obtained from similar compilations in preceding years. The most dangerous diseases are treated in detail in the order of their importance as causes of deaths, as shown by the diagram below, (compiled from the Annual Report of Vital Statistics).

DEATHS IN MICHIGAN, 13 YEARS, 1898-1910.



SOME OF THE PURPOSES OF THIS COMPILATION.

In the law establishing the State Board of Health, the Secretary of the Board is required to collect information concerning vital statistics and knowledge respecting diseases, and to disseminate such information among the people. In compliance with this requirement, it is the custom to collect, compile, tabulate and publish information relative to the causes, and methods of prevention and restriction, of the dangerous communicable diseases, under the following general heads: The General Prevalence of the disease; The Geographical Distribution of the disease; The Comparative Prevalence of the disease in Urban and Rural localities; The Reported Sources of Contagium in some of the Diseases, and the Restrictive and Preventive Measures in some of the diseases.

METHODS OF COMPILATION.

With the exception of pneumonia, tuberculosis, meningitis and typhoid fever, which have been studied by individual cases, the diseases have been compiled by *households,* instead of by *outbreaks* as in the past.

A *household* report is intended to include all the cases which occur in a house, or other place of abode, at or about the same time. When a period of over sixty days has elapsed since the last death or recovery in a household, should the disease reappear in the household and the source of contagium cannot be traced to the previous cases, a separate compilation is made of the subsequent cases. It will be seen, therefore, that it is quite possible for a particular disease to appear in the same household several times during any year and to be counted as one or as several households in the compilation, according to the circumstances attending the outbreaks.

GENERAL PLAN OF THE REPORTS.

Upon the receipt of information at this office that tuberculosis, diphtheria, typhoid fever, scarlet fever, measles, whooping-cough, meningitis, smallpox, German measles (rötheln), rabies or glanders, was present, or had recently been present, in any locality in the State, a letter was sent to the health officer, or, in his absence, to the president of the board of health, mentioning the reported existence of the disease within his jurisdiction, indicating his duties and powers, and the proper measures to be taken in restricting the disease, transmitting documents of instruction relative to the prevention and restriction of the disease for distribution among the neighbors of families in which the disease is present, and asking for reports relative to the methods employed for the restriction of the disease, the results of efforts for suppressing it, and the number of cases and deaths in each outbreak. With this letter, in each instance, except in the case of rabies and glanders, there was sent a sufficient number of blanks for the preliminary and final reports.

The information contained in the several reports together with other correspondence relative to outbreaks of such diseases, are the basis on which the statements made in this article are founded.

PNEUMONIA IN MICHIGAN IN 1910 AND PRECEDING YEARS.

GENERAL PREVALENCE.

By reference to Table 1, it may be seen that pneumonia was much more prevalent in 1910 than for the two preceding years; also more prevalent than the average for the several years preceding. While the number of non-fatal cases reported in 1910 is greater than the average number reported annually, still we believe, and with good reason, that there are yet a large number of non-fatal cases not being reported to the local health officials, and by them to this Department. This condition is probably due, in part, to the fact that pneumonia is not regarded as being a communicable disease by a large number of physicians.

At the present time, this Department usually gets its first information of cases of pneumonia from the death certificates returned to the Secretary of State's Department.

TABLE 1.—*The prevalence of pneumonia, in Michigan, in each of the seven years, 1904-1910.*

Years.	Population.*	Number of cases.†	Number of deaths.	Deaths per 100,000 of the population.
1904	2,530,016	3,790	2,903	114.7
1905	2,557,275	3,227	2,636	103.1
1906	2,584,533	3,387	2,839	109.8
1907	2,611,792	3,976	3,159	121.0
1908	2,639,050	3,177	2,502	94.8
1909	2,666,309	3,142	2,563	96.1
1910	2,810,173	3,671	3,016	107.3
Average per year	2,628,450	3,481	2,803	106.6

*Estimated for intercensal years.

†From a large number of localities only the fatal cases were reported, so that the figures in this column do not represent the number of cases that actually occurred.

GEOGRAPHICAL DISTRIBUTION OF PNEUMONIA.

In the consideration of this phase of the study of pneumonia, the State is divided into eleven geographical divisions, the counties in each of which would be likely to have somewhat similar climatic conditions. Judging from the death rates of the several divisions shown in Table 2, pneumonia was most prevalent in the Southeastern Division and least prevalent in the Southwestern Division. Arranging the divisions in the order of greatest death rates per 100,000 inhabitants, we have the Southeastern (157.6), Western (99.5), Southern Central (95.2), Upper Peninsula (95.1), Bay and Eastern (93.6), Central (93.6), Northwestern (90.0), Northern Central (89.1), Northeastern (83.4), Northern (83.0) and Southwestern (76.1). Compared with the average death rate for the State as a whole (106.6), the counties in which the disease was unusually prevalent for the seven years, 1904-1910, are: Wayne (170.8), Genesee (125.1) and Missaukee (120.1).

TABLE 2.—*The geographical distribution of pneumonia, in Michigan, in the seven years, 1904-1910, as indicated by the average number of cases and deaths, and the average deaths per 100,000 persons living, in each geographical division shown in the table.*

Geographical Divisions.	Average.			
	Population.*	Cases.†	Deaths.	Death rates.
UPPER PENINSULAR DIVISION	290,270	392	276	95.1
Alger county	7,055	9	8	113.4
Baraga county	5,670	5	5	88.2
Chippewa county	22,882	31	24	104.9
Delta county	29,162	35	14	48.0
Dickinson county	19,723	17	16	81.1
Gogebic county	18,459	18	17	92.1
Houghton county	75,565	121	89	117.8
Iron county	9,781	13	11	112.5
Keweenaw county	5,631	14	5	88.8
Luce county	4,381	5	5	114.1
Mackinac county	8,682	7	6	69.1
Marquette county	40,313	65	38	94.3
Menominee county	26,037	27	26	99.9
Ontonagon county	7,897	11	5	63.3
Schoolcraft county	9 032	14	7	77.5
NORTHWESTERN DIVISION	94,491	134	85	90.0
Benzie county	11,360	13	11	96.8
Grand Traverse county	24,744	29	21	84.9
Leelanau county	10,940	11	9	82.3
Manistee county	26,738	55	27	101.0
Wexford county	20,709	26	17	82.1
NORTHERN DIVISION	90,415	103	75	83.0
Antrim county	15,171	17	15	98.9
Charlevoix county	17,933	23	13	72.5
Cheboygan county	18,276	20	16	87.5
Crawford county	4,354	5	3	68.9
Emmet county	19,038	23	17	89.3
Kalkaska county	7,932	6	5	63.0
Otsego county	7,711	9	6	77.8
NORTHEASTERN DIVISION	65,951	63	55	83.4
Alcona county	7,111	5	4	56.3
Alpena county	20,580	19	19	92.3
Iosco county	10,585	8	8	75.6
Montmorency county	3,700	5	4	108.1
Ogemaw county	9,817	13	10	101.9
Oscoda county	2,133	4	2	93.8
Presque Isle county	12,025	9	8	66.5
WESTERN DIVISION	290,798	350	289	99.5
Kent county	146,140	171	152	104.0
Lake county	5,013	5	3	59.8
Mason county	20,313	26	21	103.4
Muskegon county	38,011	50	45	118.4
Newaygo county	18,936	19	13	68.7
Oceana county	18,386	22	19	103.3
Ottawa county	43,999	57	36	81.8
NORTHERN CENTRAL DIVISION	110,024	144	98	89.1
Clare county	9,640	12	6	62.2
Gladwin county	9,665	7	6	62.1
Isabella county	24,661	45	24	97.3
Mecosta county	19,853	25	19	95.7
Midland county	14,652	15	13	88.7
Missaukee county	10,828	14	13	120.1
Osceola county	18,946	21	15	79.2
Roscommon county	1,779	5	2	112.4

*†These footnotes are below Table 1, on a preceding page.

TABLE 2.—CONCLUDED.

Geographical Divisions.	Average.			
	Population.*	Cases.†	Deaths.	Death rates.
BAY AND EASTERN DIVISION	351,369	392	329	93.6
Arenac county	10,301	9	9	87.4
Bay county	64,706	75	69	106.6
Huron county	35,338	33	29	82.1
Lapeer county	26,588	47	31	116.6
Saginaw county	88,571	86	78	88.1
Sanilac county	34,632	33	27	78.0
St. Clair county	55,384	67	53	95.7
Tuscola county	35,849	42	33	92.1
CENTRAL DIVISION	320,528	398	300	93.6
Barry county	21,850	26	20	91.5
Clinton county	24,950	29	19	76.2
Eaton county	30,161	42	32	106.1
Genesee county	46,376	70	58	125.1
Gratiot county	30,638	38	29	94.7
Ingham county	47,023	55	38	80.8
Ionia county	34,633	40	33	95.3
Livingston county	17,975	23	16	89.0
Montcalm county	33,361	35	30	89.9
Shiawassee county	33,561	40	25	74.5
SOUTHWESTERN DIVISION	144,539	143	110	76.1
Allegan county	39,145	38	30	76.6
Berrien county	50,115	44	33	65.8
Cass county	19,662	22	18	91.5
Van Buren county	35,617	39	29	81.4
SOUTHERN CENTRAL DIVISION	330,857	472	315	95.2
Branch county	25,527	23	19	74.4
Calhoun county	55,442	89	58	104.6
Hillsdale county	29,799	31	24	80.5
Jackson county	47,433	96	50	105.4
Kalamazoo county	54,206	110	62	114.4
Lenawee county	49,297	51	41	83.2
St. Joseph county	23,199	23	21	90.5
Washtenaw county	45,954	49	40	87.0
SOUTHEASTERN DIVISION	540,642	885	852	157.6
Macomb county	32,945	37	30	91.1
Monroe county	33,010	40	35	106.0
Oakland county	46,804	71	56	119.6
Wayne county	427,883	737	731	170.8

*†These footnotes are below Table 1, on a preceding page.

THE PREVALENCE OF PNEUMONIA IN URBAN AND RURAL LOCALITIES.

Of the 1,672 incorporated localities in Michigan in 1910, 895, or 54 per cent, were, at some time during the year, infected with pneumonia. Practically the same number were infected in 1909.

To determine what influence, if any, density of population has on the prevalence of pneumonia, the cities and villages have been divided into five groups, as shown in the Table.

It will be seen that the death rate was very much higher in cities having over 50,000 population and lowest in the cities and villages having less than 5,000 inhabitants.

By Table 3a, it may be seen that, in 1910, the urban localities which showed much higher death rates from pneumonia than the death rate for this disease for the entire State for that year were: Albion, Ann Arbor, Detroit, Flint, Hancock, Ishpeming, Kalamazoo, Mt. Clemens, Pontiac and Three Rivers.

The localities, shown in Table 3a, in which the death rates from pneumonia were much lower in 1910 than the rate for the entire State for that year were: Benton Harbor, Boyne City, Cadillac, Hillsdale, Holland, Ionia, Iron Mountain, Jackson, Lansing, Manistee, Marquette, Negaunee, Niles, Owosso and Ypsilanti.

The localities, shown in Table 3a, which showed much higher death rates from pneumonia in 1910 than the average for such localities in the years 1904-1909, were: Ann Arbor, Cheboygan, Ironwood, Kalamazoo, Mt. Clemens, Pontiac, St. Joseph and Three Rivers.

The localities, shown in Table 3a, which showed much lower death rates in 1910 than the average for such localities in the years 1904-1909, were: Cadillac, Escanaba, Iron Mountain, Jackson, Ludington, Manistee, Menominee, Niles, Wyandotte and Ypsilanti.

TABLE 3.—*The prevalence of pneumonia in urban and rural localities, in Michigan, in 1910.*

Localities—Grouped according to density of population.	Population.	Health jurisdiction.			Cases.*	Deaths.	Death rates per 100,000 of the population.
		Total.	Infected.				
			Number.	Per cent of all jurisdictions.			
Cities over 50,000	628,847	3	3	100	1,037	1,026	163.2
Cities from 25,000 to 50,000	211,082	6	6	100	351	245	116.1
Cities from 10,000 to 25,000 and Calumet township (20,097)	223,916	16	16	100	352	281	125.5
Cities and villages from 5,000 to 10,000	166,749	24	24	100	175	149	89.4
Cities and villages under 5,000	402,408	388	198	51	469	333	82.8
Total urban	1,633,002	437	247	57	2,384	2,034	124.6
Rural localities—Townships†	1,177,171	1,235	648	52	1,287	982	83.4

*From many localities only the fatal cases were reported, therefore, these figures do not represent the number of cases that actually occurred.

†Exclusive of Calumet township, which, for the purpose of this study, is included in the third group of urban localities which have corresponding populations.

TABLE 3A.—*The deaths from pneumonia in 1910, and preceding years, in each of the principal localities included in the first four groups in table 3.*

Localities.	1910.			Average, 1904-1909.		
	Population.	Deaths.	Deaths per 100,000 inhabitants.	Population.*	Deaths.	Deaths per 100,000 inhabitants.
Adrian	10,763	11	102.2	11,322	10	88.3
Albion	5,833	8	137.2	5,208	6	115.2
Alpena	12,706	15	118.1	12,774	11	86.1
Ann Arbor	14,817	23	155.2	14,654	12	81.9
Battle Creek	25,267	23	91.0	24,495	29	118.4
Bay City	45,166	56	124.0	40,575	45	110.9
Benton Harbor	9,185	4	43.5	6,790	4	58.9
Boyne City	5,218	4	76.7	3,416	2	58.5
Cadillac	8,375	4	47.8	7,453	6	80.5
Calumet township	20,097	21	104.5	17,949	18	100.3
Cheboygan	6,859	8	116.6	6,881	6	87.2
Coldwater	5,945	5	84.1	6,231	5	80.2
Detroit	465,766	874	187.6	343,137	608	177.2
Dowagiac	5,088	6	117.9	4,562	5	109.6
Escanaba	13,194	15	113.7	12,066	19	157.5
Flint	38,550	58	150.5	15,997	23	143.8
Grand Haven	5,856	6	102.5	5,549	5	90.1
Grand Rapids	112,571	106	94.2	100,814	107	106.1
Hancock	8,981	15	167.0	7,279	12	164.9
Hillsdale	5,001	3	60.0	5,221	4	76.6
Holland	10,490	7	66.7	9,701	7	72.2
Houghton	5,113	5	97.8	4,963	4	80.6
Ionia	5,030	3	59.6	5,230	4	76.5
Iron Mountain	9,216	4	43.4	8,174	9	110.1
Ironwood	12,821	13	101.4	10,216	7	68.5
Ishpeming	12,448	18	144.6	10,603	15	141.5
Jackson	31,433	25	79.5	25,375	28	110.3
Kalamazoo	39,437	58	147.1	33,143	39	117.7
Lansing	31,229	25	80.1	22,646	17	75.1
Laurium	8,537	8	93.7	8,910	7	78.6
Ludington	9,132	5	54.8	7,317	9	123.0
Manistee	12,381	9	72.7	11,738	12	102.2
Marquette	11,503	9	78.2	11,045	11	99.6
Menominee	10,507	10	95.2	10,020	14	139.7
Monroe	6,893	8	116.1	6,806	8	117.5
Mt. Clemens	7,707	13	168.7	7,441	10	134.4
Muskegon	24,064	32	133.0	20,946	28	133.7
Negaunee	8,460	4	47.3	6,711	4	59.6
Niles	5,156	2	38.8	4,863	3	61.7
Owosso	9,639	6	62.2	9,426	6	63.7
Pontiac	14,532	49	337.2	11,581	16	138.2
Port Huron	18,863	21	111.3	20,572	21	102.1
Saginaw	50,510	46	91.1	49,276	50	101.5
St. Joseph	5,936	7	117.9	5,427	3	55.3
Sault Ste. Marie	12,615	17	134.8	12,007	13	108.3
Three Rivers	5,072	8	157.7	4,140	5	120.8
Traverse City	12,115	11	90.8	12,381	10	80.8
Wyandotte	8,287	10	120.7	5,577	12	215.2
Ypsilanti	6,230	3	48.2	7,718	5	64.8

*Estimated for intercensal years.

SEASONAL PREVALENCE.

Judging from the average number of persons who were taken sick in each month in the seven years, 1904-1910, shown in Table 4, pneumonia was most prevalent in the month of February, and least prevalent in the month of August.

By the Secretary of State's Vital Statistics of Michigan, it appears that during the thirteen years, 1898-1910, the greatest number of deaths from pneumonia occurred in the months of February and March, and the least number in August.

TABLE 4.—*The seasonal prevalence of pneumonia, in Michigan, as indicated by the average number of persons taken sick in each month in the seven years, 1904-1910, and by the average number of deaths, from this disease, in each month in the thirteen years, 1898-1910.*

Years.		Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1904-1910	Average number of persons Taken sick in month*..	440	464	410	340	274	115	68	53	87	137	214	287
1898-1910	Average number of deaths in each month†........	343	385	387	321	243	125	72	60	79	120	178	258

*The months in which some of the cases began were not reported.

†The averages for the years, 1898-1903, are compiled from the Secretary of State's Vital Statistics of Michigan, and for the years, 1904-1910, from the Michigan Monthly Bulletin of Vital Statistics.

INFLUENCE OF AGE AND SEX.

The ages of those taken sick with pneumonia in the seven years, 1904-1910, were stated in 23,750 instances.

In the case of those who died from pneumonia, the ages were stated in 19,262 instances, and of this number, about 24 per cent were under one year; 37 per cent under five years; nine per cent between the ages of 5 and 25 years; 15 per cent between the ages of 25 and 50 years; 25 per cent between the ages of 50 and 75 years, and nearly 12 per cent 75 years and over.

The number and per cent of cases and deaths by one-year periods from 0-5 years, by five-year periods from 5-75 years, and in one group for those over 75 years, are contained in Table 5.

Thirty-eight per cent of the males and 37 per cent of the females who died, and 18 per cent of the males and 20 per cent of the females who recovered, were under five years of age.

Ten per cent of the males and 14 per cent of the females who died, and two per cent of the males and four per cent of the females who recovered, were over 74 years of age.

Up to the fourth year, between the fifth and ninth years, and between the ages of 15 and 69 years, inclusive, the fatality was slightly higher in the males than in the females. At nearly all ages the recoveries were more numerous among the males than females.

PREDISPOSING INFLUENCES.

In reply to the question, "What sickness or other predisposing influence preceded this case?" 3,268 cases were reported as having followed a cold; 1,094 cases following influenza; 576 cases following bronchitis; 423 cases following exposure to inclement weather.

TABLE 5.—*The influence of age and sex in pneumonia, as indicated by the number of those of known ages, who died or recovered from this disease, in the seven years, 1904-1910. Arranged, by sex, in age periods of one year for those of from one to five years; in five-year periods for those of from five to seventy-five years; and in one group for those of seventy-five years and over.*

Age periods.	Died.						Recovered.					
	Total deaths.			Per cent of deaths.			Total recoveries.			Per cent of recoveries.		
	Males.	Females.	Both sexes.	Males.	Females.	Both sexes.	Males.	Females.	Both sexes.	Males.	Females.	Both sexes.
0-1 years	2,663	1,950	4,613	13.83	10.12	23.95	105	78	183	2.34	1.74	4.08
1-2 years	790	708	1,498	4.10	3.68	7.78	85	92	177	1.89	2.05	3.94
2-3 years	274	263	537	1.42	1.37	2.79	96	80	176	2.14	1.78	3.92
3-4 years	166	151	317	.86	.79	1.65	93	79	172	2.07	1.76	3.83
4-5 years	96	102	198	.50	.53	1.03	81	58	139	1.80	1.30	3.10
Under five years	3,989	3,174	7,163	20.71	16.49	37.20	460	387	847	10.25	8.62	18.87
5-9 years	251	235	486	1.30	1.22	2.52	357	272	629	7.95	6.06	14.01
10-14 years	119	151	270	.62	.78	1.40	227	174	401	5.06	3.88	8.94
15-19 years	272	199	471	1.41	1.04	2.45	300	138	438	6.68	3.07	9.75
20-24 years	318	229	547	1.65	1.19	2.84	203	94	297	4.52	2.09	6.61
25-29 years	291	225	516	1.51	1.17	2.68	149	83	232	3.32	1.85	5.17
30-34 years	329	247	576	1.71	1.28	2.99	120	87	207	2.67	1.94	4.61
35-39 years	379	261	640	1.97	1.35	2.32	122	83	205	2.72	1.85	4.57
40-44 years	447	229	676	2.32	1.19	3.51	117	82	199	2.61	1.82	4.43
45-49 years	470	264	734	2.44	1.37	3.81	114	100	214	2.54	2.23	4.77
50-54 years	457	270	727	2.37	1.40	3.77	103	75	178	2.30	1.67	3.97
55-59 years	491	355	846	2.55	1.84	4.39	66	68	134	1.47	1.52	2.99
60-64 years	534	469	1,003	2.77	2.43	5.20	73	73	146	1.63	1.63	3.26
65-69 years	596	549	1,145	3.09	2.85	5.94	53	70	123	1.18	1.56	2.74
70-74 years	576	600	1,176	2.99	3.12	6.11	58	63	121	1.30	1.40	2.70
75 years and over	1,066	1,220	2,286	5.53	6.34	11.87	48	69	117	1.07	1.54	2.61
All ages	10,585	8,677	19,262	54.94	45.06	100.00	2,570	1,918	4,488	57.27	42.73	100.00

TABLE 6.—*Predisposing influences in pneumonia, as indicated by the manner in which the disease was reported to have begun, in some of the cases, in the seven years, 1904-1910.*

Disease began as or followed.	Number of instances.	Disease began as or followed.	Number of instances.
Cold	3,268	Appendicitis	11
Influenza	1,094	Mitral insufficiency	10
Bronchitis	576	Cholera infantum	9
Exposure to inclement weather	423	Diphtheria	9
Heart disease	303	Dropsy	9
Senility	300	Spinal trouble	8
Measles	282	Sepsis	7
Whooping-cough	202	Epilepsy	7
Kidney trouble	129	Rickets	7
Asthma	124	Teething	6
Pleurisy	109	Malarial fever	6
Alcoholism	92	Otitis media	6
Bowel trouble	80	Cancer	6
Confinement	76	Eclampsia	6
General debility	75	Chicken-pox	6
Meningitis	67	Insanitary conditions	5
Tuberculosis	61	Syphilis	5
Stomach trouble	58	Mumps	5
Rheumatism	57	Scarlet fever	5
Traumatism	45	Non-acclimated	4
Paralysis	41	Uremia	4
Convulsions	33	Dust on lungs	4
Tonsillitis	32	Morphine habit	3
Mal-nutrition	29	Hiccough	3
Liver trouble	28	Catarrhal fever	2
Typhoid fever	26	Eczema	2
Abscess	25	Strangulation of hernia	2
Marasmus	22	Eye trouble	2
Croup	19	Puerperal fever	2
Apoplexy	19	Pyemia	2
Lung trouble	18	Adenoids	1
Brain trouble	16	Atmospheric conditions	1
Peritonitis	15	Anesthesia	1
Anaemia	15	Change of life	1
Miscarriage	14	Thrush	1
Diabetes	14	Gangrene	1
Throat trouble	11	Carbuncle	1
Operation	11	Sunstroke	1
Erysipelas	11		

INFLUENCE OF OCCUPATION.

The occupations of pneumonia patients in the seven years, 1904-1910, were given in 10,984 instances.

Heading the list are those engaged in housework—housewives, housekeepers and domestics—to the number of 3,843, many of whom spend a considerable portion of their time in ill-ventilated and dust-laden rooms. Dirt—often contaminated with infected sputum—carried into the home on the shoes and skirts, and disseminated throughout the rooms by air currents, or by the periodical sweeping and dusting, is generally believed to play a very important part in the spread of pneumonia, and other diseases of the respiratory organs.

Next in order is the farmer class, to the number of 2,381, who, though naturally a hardy race, seem to be very susceptible to this disease.

Next in order is the laboring class, with 1.378 cases; and next to them the student class—principally young children of school age—with 632 cases.

In the six years, 1905-1910, there were 6,765 cases where the ages of the patients were given as under five years, therefore, no occupation was given, and they were still too young to attend school, so could not be included in the student class.

A complete list of occupations of pneumonia patients, as reported in the seven years, 1904-1910, may be found in Table 7.

TABLE 7.—*The influence of occupation in pneumonia, in the seven years, 1904-1910.*

Occupations.	Number of instances.	Occupations.	Number of instances.	Occupations.	Number of instances.
Housewife	3,843	Miller	23	Laundryman	4
Farmer	2,381	Cigarmaker	23	Nun	4
Laborer	1,378	Nurse	21	Attendant in prison or asylum	4
Student	632	Tailor	20	Street car conductor	4
Mechanic	471	Legal profession	19	Inspector	3
Miner	292	Nightwatch	16	Theatrical man	3
Clerk	272	Printer	16	Cattle buyer	3
Merchant	242	Harnessmaker	14	Chauffeur	3
Teamster	119	Musician	14	Bookbinder	3
Railroad man	103	Hotel keeper	14	Motorman	2
Factory employee	78	Waiter	14	Surface foreman	2
Painter and paperhanger	71	Liveryman	12	Messenger	2
Agent	68	Fisherman	12	Hair dresser	2
Woodsman	60	Plumber	12	Stone cutter	2
School teacher	58	Baker	12	Carpet weaver	2
Saloon man	53	Lineman	12	Butter maker	1
Physician	42	Tinner	11	Bean picker	1
Dressmaker and milliner	40	Mail carrier	11	Well digger	1
Minister	39	Policeman	11	Architect	1
Sailor	38	Engineer	10	Elevator boy	1
Shoemaker	36	Fireman	10	Plasterer	1
Machinist	33	Washerwoman	9	Upholsterer	1
Lumberman	32	Peddler	8	Trapper	1
Contractor	29	Real estate man	6	Ice cream maker	1
Cook	27	Hotel porter	6	Race horse man	1
Barber	27	Cooper	6	Ice man	1
Mason	26	Dentist	6	Chemist	1
Janitor	25	Veterinarian	5	Salt packer	1
Butcher	24	Marine engineer	5	Photographer	1
Gardener and florist	24	Soldier	5	Feather renovator	1

RESTRICTIVE AND PREVENTIVE MEASURES.

By reference to Table 8, it may be seen that, of the total number of cases of pneumonia in the seven years, 1904-1910, but 8,356, or 34 per cent, were isolated from all persons except nurses and attending physicians; that in 10,273 instances, or 45 per cent of the whole number, the sputa was disinfected, and that in 13,364 instances, or 55 per cent of the whole number, the rooms occupied by the patients were disinfected. The enforcement of the restrictive and preventive measures for the year 1910 shows a slight improvement over that of former years.

As previously stated, in a large number of instances, this Department received its first information of cases of pneumonia through the death returns, and, in many instances, the health officials had no knowledge of these cases until notified of the same by this Department, when, of course, it would be too late to carry out the restrictive and preventive measures. This fact will account, to a considerable extent, for the comparatively small number of cases in which precautions were taken.

TABLE 8.—*Restrictive and preventive measures in pneumonia, in Michigan, in the seven years, 1904-1910.*

Restrictive and preventive measures.	Number of instances.	Per cent.
ISOLATION:		
Enforced	8,356	34
Neglected	5,031	21
Not stated, or statements doubtful	10,983	45
DISINFECTION OF SPUTA:		
Enforced	10,273	*45
Neglected	2,140	*9
Not stated, or statements doubtful	11,359	*48
DISINFECTION OF BEDDING, CLOTHING, ETC., SOILED BY SPUTA:		
Enforced	13,501	*57
Neglected	2,102	*9
Not stated, or statements doubtful	8,169	*34
DISINFECTION OF ROOM OCCUPIED BY PATIENT:		
Enforced	13,364	55
Neglected	3,216	13
Not stated, or statements doubtful	7,790	32

*In 598 instances the reports stated that there was no sputa, therefore this number has been deducted from the total number of cases before making the per cent.

TUBERCULOSIS IN MICHIGAN IN 1910 AND PRECEDING YEARS.

GENERAL PREVALENCE.

During the year 1910, tuberculosis was reported present in 900 incorporated health jurisdictions in this State, with an aggregate of 4,415 cases, including 2,677 deaths. By Table 9 it may be seen that the number of cases reported in 1910 was 29 per cent greater than in 1909. This fact is undoubtedly due to the new law which became operative in June, 1909, requiring physicians to report all cases of tuberculosis coming under their observation.

By reason of the fact that many cases of this disease are of long duration, and in some stages of the disease not under the care of a physician, the number of cases reported to this Department are believed to be considerably less than the actual number in existence. The above reason is also given for the high rate of deaths to cases.

The compilation of information relative to the prevalence of tuberculosis in Michigan was made for the first time in 1893, but from that time to 1898, when the new law for the registration of deaths took effect, the reports of cases and deaths were much less than the actual number occurring. Hence, the reason for commencing Table 9 with the year 1898.

TABLE 9.—*The prevalence of tuberculosis, in Michigan, in each of the thirteen years, 1898-1910.*

Years.	Population.*	Number of cases.†	Number of Deaths.	Deaths per 100,000 population.
1898	2,389,393	3,041	2,728	114.2
1899	2,426,331	2,975	2,516	103.7
1900	2,420,982	2,721	2,221	91.7
1901	2,448,241	2,915	2,344	95.7
1902	2,475,499	2,658	2,185	88.3
1903	2,502,758	2,745	2,319	92.7
1904	2,530,016	2,928	2,515	99.4
1905	2,557,275	2,590	2,464	96.4
1906	2,584,533	2,653	2,502	96.8
1907	2,611,792	2,699	2,496	95.6
1908	2,639,050	2,705	2,512	95.2
1909	2,666,309	3,423	2,465	92.4
1910	2,810,173	4,415	2,677	95.3
Average per year	2,543,258	2,959	2,457	96.6

*Estimated for intercensal years.

†From many localities only the fatal cases were reported, therefore the figures in this column do not represent the number of cases that actually occurred.

The number of deaths from pulmonary tuberculosis per 100,000 persons living, reported to the Secretary of State during the twenty-nine years ending with 1897 (Table 10), probably quite accurately represents the annual fluctuations of, but not the total deaths from, this disease. It may be seen that, compared with any previous year, there was a remarkable and unprecedented decrease in the death rate from tuberculosis in 1891. This decrease is probably due to the "campaign of education" as to the restriction and prevention of this disease, which began in 1880, and which, apparently, began to show results in 1891.

TABLE 10.—*The number of reported deaths from tuberculosis of the lungs per 100,000 persons living, in Michigan, in each of the twenty-nine years 1869-1897. Compiled from the Secretary of State's Vital Statistics of Michigan.*

Year.	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	188.0
Deaths	108.1	122.5	106.0	115.1	109.6	102.0	104.9	109.2	110.9	106.1	105.6	111.7
Year.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.
Deaths	116.1	104.4	112.3	120.8	105.3	107.3	108.7	121.0	104.3	105.4	96.3	95.2
Year.	1893.	1894.	1895.	1896.	1897.	Average, 1869-1897.						
Deaths	97.7	98.4	105.1	90.4	80.6	106.2						

GEOGRAPHICAL DISTRIBUTION.

By Table 11 it may be seen that, as compared with the average death rate for tuberculosis for the entire State (96.6 deaths per 100,000 inhabitants), the disease was much more prevalent than usual in the counties of Luce, Mackinac, Grand Traverse and Wayne.

In a lesser degree, the disease was more prevalent than usual in the counties of Delta, Houghton, Keweenaw, Marquette, Leelanau, Kent and Roscommon.

The disease was much less prevalent than usual in the counties of Alger, Iron, Schoolcraft, Wexford, Otsego, Ogemaw, Oscoda, Presque Isle, Clare, Gladwin, Missaukee, Osceola, Arenac, Sanilac and Barry.

TABLE 11.—*The geographical distribution of tuberculosis, in Michigan, in the thirteen* years, *1898-1910, as indicated by the average number of cases and deaths, and the average deaths per 100,000 persons living, in each geographical division shown in the table.*

Geographical Divisions.	Average.			
	Population.*	Cases.†	Deaths.	Death rates.
UPPER PENINSULAR DIVISION	275,016	354	281	102.2
Alger county	6,474	5	3	46.3
Baraga county	5,331	5	5	93.8
Chippewa county	21,906	24	21	95.9
Delta county	27,059	36	30	110.9
Dickinson county	18,636	21	17	91.2
Gogebic county	17,479	18	16	91.5
Houghton county	69,936	112	82	117.3
Iron county	9,266	9	6	64.8
Keweenaw county	4,568	6	5	109.5
Luce county	3,723	6	5	134.3
Mackinac county	8,118	11	11	135.5
Marquette county	40,435	60	46	113.8
Menominee county	26,136	22	21	80.3
Ontonagon county	7,250	11	7	96.6
Schoolcraft county	8,699	8	6	69.0
NORTHWESTERN DIVISION	91,677	126	98	106.9
Benzie county	10,954	13	11	100.4
Grand Traverse county	23,354	48	33	141.3
Leelanau county	10,888	14	13	119.4
Manistee county	27,233	33	27	99.1
Wexford county	19,248	18	14	72.7
NORTHERN DIVISION	84,409	82	69	81.7
Antrim county	15,422	14	12	77.8
Charlevoix county	16,153	19	15	92.9
Cheboygan county	17,286	15	14	81.0
Crawford county	3,724	3	2	53.7
Emmet county	17,349	20	16	92.2
Kalkaska county	7,472	7	6	80.3
Otsego county	7,003	4	4	57.1
NORTHEASTERN DIVISION	60,622	49	45	74.2
Alcona county	5,645	6	5	88.6
Alpena county	19,966	16	15	75.1
Iosco county	10,286	9	9	87.5
Montmorency county	3,559	3	3	84.3
Ogemaw county	8,709	7	6	68.9
Oscoda county	1,910	2	1	52.4
Presque Isle county	10,547	6	6	56.9
WESTERN DIVISION	281,814	362	282	100.1
Kent county	140,454	210	153	108.9
Lake county	5,032	6	5	99.4
Mason county	20,019	22	19	94.9
Muskegon county	37,179	46	38	102.2
Newaygo county	18,429	15	14	76.0
Oceana county	17,855	16	15	84.0
Ottawa county	42,846	47	38	88.7
NORTHERN CENTRAL DIVISION	107,427	96	82	76.3
Clare county	9,158	7	6	65.5
Gladwin county	8,333	6	5	60.0
Isabella county	24,200	25	21	86.8
Mecosta county	20,370	20	17	83.5
Midland county	14,832	13	12	80.9
Missaukee county	10,205	7	6	58.8
Osceola county	18,638	16	13	69.7
Roscommon county	1,691	2	2	118.3

*†These footnotes are below Table —, on a preceding page.

TABLE 11.—Concluded.

Geographical Divisions.	Average.			
	Population.*	Cases.†	Deaths.	Death rates.
Bay and Eastrtn Division	348,566	317	277	79.5
Arenac county	9,897	6	5	50.5
Bay county	64,436	62	57	88.5
Huron county	35,235	31	27	76.6
Lapeer county	27,138	27	21	77.4
Saginaw county	85,715	78	73	85.2
Sanilac county	34,870	32	21	60.2
St. Clair county	55,296	48	43	77.8
Tuscola county	35,979	33	30	83.4
Central Division	318,593	348	278	87.3
Barry county	22,268	20	16	71.9
Clinton county	25,174	22	19	75.5
Eaton county	30,983	36	30	96.8
Genesee county	44,377	48	41	92.4
Gratiot county	30,214	31	28	92.7
Ingham county	44,465	43	33	74.2
Ionia county	34,952	41	33	94.4
Livingston county	18,683	36	17	91.0
Montcalm county	33,619	33	29	86.3
Shiawassee county	33,858	38	32	94.5
Southwestern Division	143,706	164	133	92.6
Allegan county	39,105	43	35	89.5
Berrien county	49,912	63	50	100.2
Cass county	20,209	23	19	94.0
Van Buren county	34,480	35	29	84.1
Southern Central Division	326,231	406	306	93.8
Branch county	26,070	29	23	88.2
Calhoun county	53,439	55	48	89.8
Hillsdale county	29,821	31	26	87.2
Jackson county	47,671	48	43	90.2
Kalamazoo county	50,403	92	54	107.1
Lenawee county	49,003	47	41	83.7
St. Joseph county	23,579	28	23	97.5
Washtenaw county	46,245	76	48	103.8
Southeastern Division	505,285	655	600	118.7
Macomb county	33,034	39	35	106.0
Monroe county	33,123	35	31	93.6
Oakland county	45,908	56	45	98.0
Wayne county	393,220	525	489	124.4

*†These footnotes are below Table —, on a preceding page.

THE PREVALENCE OF TUBERCULOSIS IN URBAN AND RURAL LOCALITIES.

By reference to Table 12, it may be seen that, in 1910, as indicated by the death rates, tuberculosis was most prevalent in the large centers of population, particularly in the cities of from 10,000 to 25,000 inhabitants, and cities of 50,000 and over. In cities of from 25,000 to 50,000, the cities and villages under 5,000, and in the rural localities, the death rates were less than the death rate for the entire State for that year.

By Table 12a, it is shown that, in 1910, the urban localities that showed much higher death rates from tuberculosis than the death rate for this disease for the entire State for that year were: Ann Arbor, Benton Harbor, Calumet township, Hancock, Ironwood, Ishpeming, Kalamazoo, Marquette, Monroe, Niles, Pontiac, Traverse City, Wyandotte and Ypsilanti.

The localities, shown in Table 12a, in which the death rates from tuberculosis were much lower in 1910 than the rate for the entire State for that year were: Albion, Battle Creek, Bay City, Boyne City, Holland, Houghton, Laurium, Negaunee and St. Joseph.

The localities, shown in Table 12a, which showed much higher death rates from tuberculosis in 1910 than the average for such localities in the years, 1904-1909, were: Adrian, Ann Arbor, Hancock, Ironwood, Monroe, Niles, Traverse City, Wyandotte and Ypsilanti.

The localities, shown in Table 12a, which showed much lower death rates from tuberculosis in 1910 than the average for such localities for the years 1904-1909, were: Adrian, Ann Arbor, Hancock, Ironwood, Holland, Houghton, Manistee, Muskegon, Negaunee, Owosso, St. Joseph and Sault Ste. Marie.

TABLE 12.—*The prevalence of tuberculosis in urban and rural localities, in Michigan, in 1910.*

Localities—Grouped according to density of population.	Population.	Health jurisdictions.			Cases.*	Deaths.	Death rates per 100,000 of the population.
		Total.	Infected.				
			Number.	Per cent of all jurisdictions.			
Cities over 50,000	628,847	3	3	100	1,194	722	114.8
Cities from 25,000 to 50,000	211,082	6	6	100	360	195	92.4
Cities from 10,000 to 25,000 and Calumet township (20,097)	223,916	16	16	100	573	272	121.5
Cities and villages from 5,000 to 10,000	166,749	24	24	100	380	187	112.1
Cities and villages under 5,000	402,408	388	242	62	572	351	87.2
Total urban	1,633,002	437	291	67	3,079	1,727	105.8
Rural localities—Townships†	1,177,171	1,235	609	49	1,336	950	80.7

*From many localities only the fatal cases were reported, therefore, these figures do not represent the number of cases that actually occurred.

†Exclusive of Calumet township, which, for the purpose of this study is included in the third group of urban localities which have corresponding populations.

TABLE 12A.—*The deaths from tuberculosis in 1910, and preceding years, in each of the principal localities included in the first four groups in Table 12.*

Localities.	1910.			Average, 1904-1909.		
	Population.	Deaths.	Deaths per 100,000 inhabitants.	Population.*	Deaths.	Deaths per 100,000 inhabitants.
Adrian	10,763	10	92.9	11,322	8	70.7
Albion	5,833	2	34.3	5,208	4	76.8
Alpena	12,706	12	94.4	12,774	11	86.1
Ann Arbor	14,817	26	175.5	14,654	19	129.7
Battle Creek	25,267	18	71.2	24,495	26	106.1
Bay City	45,166	32	70.8	40,575	36	88.7
Benton Harbor	9,185	15	163.3	6,790	11	162.0
Boyne City	5,218	3	57.5	3,416	3	87.8
Cadillac	8,375	7	83.6	7,453	6	80.5
Calumet township	20,097	23	114.4	17,949	25	139.3
Cheboygan	6,859	7	102.1	6,881	6	87.2
Coldwater	5,945	6	100.9	6,231	5	80.2
Detroit	465,766	541	116.2	343,137	419	122.1
Dowagiac	5,088	5	98.3	4,562	5	109.6
Escanaba	13,194	11	83.4	12,066	21	174.0
Flint	38,550	42	108.9	15,997	16	100.0
Grand Haven	5,856	6	102.5	5,549	6	108.1
Grand Rapids	112,571	132	117.3	100,814	105	104.2
Hancock	8,981	20	222.7	7,279	10	137.4
Hillsdale	5,001	5	100.0	5,221	6	114.9
Holland	10,490	6	57.2	9,701	10	103.1
Houghton	5,113	1	19.6	4,963	4	80.6
Ionia	5,030	5	99.4	5,230	6	114.7
Iron Mountain	9,216	9	97.7	8,174	9	110.1
Ironwood	12,821	16	124.8	10,216	9	88.1
Ishpeming	12,448	15	120.5	10,603	15	141.5
Jackson	31,433	29	92.3	25,375	30	118.2
Kalamazoo	39,437	51	†129.3	33,143	45	135.8
Lansing	31,229	23	73.7	22,646	15	66.2
Laurium	8,537	6	70.3	8,910	8	89.8
Ludington	9,132	7	76.7	7,317	5	68.4
Manistee	12,381	11	88.8	11,738	16	136.3
Marquette	11,503	19	165.2	11,045	16	144.9
Menominee	10,507	9	85.7	10.020	10	99.8
Monroe	6,893	10	145.1	6,806	6	88.2
Mt. Clemens	7,707	9	116.8	7,441	10	134.4
Muskegon	24,064	22	91.4	20,946	26	124.1
Negaunee	8,460	2	23.6	6,711	8	119.2
Niles	5,156	12	232.7	4,863	6	123.4
Owosso	9,639	8	83.0	9,426	11	116.7
Pontiac	14,532	27	‡185.8	11,581	18	155.4
Port Huron	18,863	15	79.5	20,572	14	68.1
Saginaw	50,510	49	97.0	49,276	49	99.4
St. Joseph	5,936	4	67.4	5,427	5	92.1
Sault Ste. Marie	12,615	11	87.2	12,007	15	124.9
Three Rivers	5,072	5	98.6	4,140	3	72.5
Traverse City	12,115	39	§321.9	12,381	28	226.2
Wyandotte	8,287	20	241.3	5,577	10	179.3
Ypsilanti	6,230	13	208.7	7,718	8	103.7

*Estimated for intercensal years.

†Excluding the deaths from tuberculosis occurring in the asylum, the death rate from this disease for the city is only 88.8, while the death rate in the asylum is 551.5 per 100,000 inmates.

‡The death rate for the city is 82.5 and for the asylum 1,115.2.

§The death rate for the city is 148.6 and for the asylum 1,514.1.

THE SEASONAL PREVALENCE OF TUBERCULOSIS.

As a rule, tuberculosis, in the early stages, is not recognized, and consequently, the time of its inception is not generally known or reported. This, coupled with the fact that regular reports of the progress of many cases are lacking, renders it difficult to determine with any degree of accuracy, the seasonal prevalence of the disease. Table 13, is, therefore, designed to take the place of a table showing the seasonal prevalence. The months of greatest fatality, named in the order of greatest number of deaths, were April, May and March; the months of least fatality, being from July to September, inclusive.

TABLE 13.—*The seasonal fatality from tuberculosis, in Michigan, as shown by the average number of deaths from this disease in each month in the seventeen years, 1894-1910.*

Months	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Average number of deaths	170	174	189	193	190	161	154	153	147	162	156	169

LOCATION OF THE DISEASE IN TUBERCULOSIS.

The location of the disease in tuberculous persons for the period of sixteen years, ending in 1910, is shown in Table 14. With a view to aiding this study, the body has been divided into five divisions, as follows: Cranial cavity, spine, thoracic cavity, abdominal cavity and joints. As may be seen by the above mentioned table, the disease was located in the thoracic cavity in nearly seven times as many instances as in all the other divisions combined, and of the organs of the thoracic cavity, the disease was located in the lungs in thirty-three times as many instances as in all the other organs of that cavity combined.

Usually the disease was located in more than one part of the body, and in many instances, several different organs or parts, at the same time.

TABLE 14.—*Location of the disease in tuberculous persons, in Michigan, during the sixteen years, 1895-1910.*

Part of the body.			Number of instances.
Cranial cavity (meaninges and membranes)			179
Spine (vertebrae, cord and membranes)			110
Thoracic cavity	Pharynx	12	25,141
	Larynx	338	
	Bronchi	112	
	Lungs	24,391	
	Pleura	27	
	Instances in which the location of the disease was not definitely specified	261	
Abdominal cavity	Stomach	222	2,372
	Liver	93	
	Kidneys	132	
	Spleen	7	
	Bladder	47	
	Intestines	1,396	
	Peritoneum	344	
	Instances in which the location of the disease was not definitely specified	131	
Joints	Shoulder	3	173
	Elbow	3	
	Hip	107	
	Knee	42	
	Joints not specified	18	
Instances in which the disease was located in the tissues or other parts of the body but not definitely specified			935

REPORTED SOURCES OF CONTAGIUM.

The difficulty in tracing cases of tuberculosis to their source is nowhere better illustrated than in the very small number of reports received at this office from year to year which throw any light upon this phase of the study of tuberculosis, and it is probable that, in many instances, where a source is reported, the information is based upon circumstantial evidence only. From the reports of tuberculosis for the years 1907-1910, it is learned that 492 cases were traced to former cases of the disease, and that in 1,325 instances the patients had tuberculous relatives or associates.

In reply to the question, "Can you trace any other case of consumption or tuberculosis to this case?" the health officer answered "Yes" in 54 instances during the years, 1907-1910.

INFLUENCE OF AGE AND SEX IN TUBERCULOSIS.

Table 15 indicates that the greatest number of those of both sexes who died or recovered from tuberculosis were between the ages of twenty and thirty years. From infancy up to the age of thirty years was a gradual increase, and after the age of thirty there was a gradual decrease in the number of those who died or recovered. Of those who died under the age of forty, the greater number were females, and of those who recovered under the age of forty, the greater number were also females. Of those who died between the ages of forty and eighty years, the greater number were males, which is also true of those who recovered between the ages of forty and seventy years. At all ages the females constituted about 54 per cent of those who died.

The average age of fatal cases in the seventeen years, 1894-1910, was for males 36.2, and for females 32.7.

The average age of non-fatal cases in the seventeen years, 1894-1910, was for males 32.4, and for females 29.2.

TABLE 15.—*The influence of age and sex in tuberculosis, as indicated by the number of those of known ages who died or recovered from this disease, in Michigan, in the seventeen years, 1894-1910. Arranged by sex, in age periods of ten years each.*

Age periods.	Died.						Recovered.		
	Number.			Per cent.			Number.		
	Males.	Females.	Both sexes.	Males.	Females.	Both sexes.	Males.	Females.	Both sexes.
Under 10 years	616	654	1,270	1.86	1.97	3.83	4	2	6
10 to 19 years	1,362	2,593	3,955	4.10	7.81	11.91	11	16	27
20 to 29 years	4,504	5,861	10,365	13.57	17.65	31.22	17	25	42
30 to 39 years	3,192	3,749	6,941	9.62	11.29	20.91	13	24	37
40 to 49 years	2,348	1,998	4,346	7.07	6.02	13.09	12	6	18
50 to 59 years	1,718	1,221	2,939	5.17	3.68	8.85	8	4	12
60 to 69 years	1,164	1,013	2,177	3.51	3.05	6.56	3	1	4
70 to 79 years	563	481	1,044	1.69	1.45	3.14	....	2	2
80 years and over	75	88	163	.23	.26	.49	....	....	....
All ages	15,542	17,658	33,200	46.82	53.18	100.00	68	80	148

INFLUENCE OF COLOR IN TUBERCULOSIS.

In Table 16 it is shown that, according to the proportion of white and colored persons in the population, tuberculosis was more prevalent among the colored population.

Of the colored population, the disease was most prevalent among the Indians.

TABLE 16.—*The color of some of the tuberculous persons, in Michigan, reported during the sixteen years, 1895-1910.*

Color.	Number of instances in which the color was stated.	Per cent.	Approximate proportion of the total population of the State.—Expressed in per cents.
White	33,711	96.69	99.08
Black (Negro)	665	1.90	.64
Red (Indian)	487	1.40	.26
Yellow (Japanese)	2	.01	.26

CIVIL CONDITION OF TUBERCULOUS PERSONS.

During the years 1895-1910, the reports of cases in which the civil condition of patients was stated, showed that 58 per cent of the patients were or had been married, and that 42 per cent were single.

INFLUENCE OF OCCUPATION IN TUBERCULOSIS.

What has been said in the preceding article, relative to the influence of occupation in pneumonia, will apply equally to tuberculosis, as a comparison of Tables 7 and 17 will show.

During the sixteen years in which the occupation of tuberculous persons has been studied, very many cases were reported as having no occupations, as infants, inmates of charitable, penal and reformatory institutions, etc.

To learn what occupations render persons more susceptible to tuberculosis than others, this Department has made a special study of certain occupations, showing the proportionate mortality from tuberculosis in the three years, 1908-1910, compared with the average mortality from tuberculosis of all persons in Michigan, in the five years, 1903-1907, by age groups, as may be seen by Tables 17a, 17b, etc.

By reference to Table 17a, it is shown that the average annual per cent of deaths due to tuberculosis, among all persons over 15 years of age, in the five years, 1903-1907, is 9.4; by reference to Table 17c, it will be seen that the average annual per cent of deaths due to tuberculosis among males over 15 years of age, for the same five-year period, is 8.4; and Table 21d shows that the average annual per cent of deaths due to tuberculosis among females over 15 years of age, for the same five-year period, is 10.6.

Table 17a shows that, in the three years, 1908-1910, tuberculosis caused 28.2 per cent of all the deaths among persons engaged in cigar making, while among all persons of the same ages tuberculosis caused 9.4 per cent of the deaths.

Table 17b shows that 27.6 per cent of the deaths among school teachers was due to tuberculosis, as compared with 9.4 per cent among all persons.

Table 17c shows that 26.4 per cent of the deaths among printers was due to tuberculosis, as compared with 8.4 per cent among all males.

Table 17d shows that 18.1 per cent of the deaths among dressmakers was due to tuberculosis, compared with 10.6 per cent among all females.

Table 17e shows that 17.7 per cent of the deaths among painters was due to tuberculosis, compared with 8.4 per cent among all males.

Table 17f shows that 13.2 per cent of the deaths among teamsters was due to tuberculosis, compared with 8.4 per cent among all males.

Table 17g shows that 12.1 per cent of the deaths among the miners was due to tuberculosis, compared with 8.4 per cent among all males.

Table 17h shows that 12.1 per cent of the deaths among tailors was due to tuberculosis, compared with 9.4 among all persons.

Table 17i shows that only 7.3 per cent of the deaths among carpenters was due to tuberculosis, compared with 8.4 per cent among all males.

TABLE 17.—*Occupations of 24,395 tuberculous persons, in Michigan, in the sixteen years, 1895-1910.*

Occupations.	Number of instances.	Occupations.	Number of instances.	Occupations.	Number of instances.
Housework	9,910	Fireman	30	Rag picker and sorter	3
Farmer	3,257	Soldier	29	Watchman	3
Laborer	2,882	Photographer	27	Coremaker	3
Student	1,277	Fisherman	25	Cooper	3
Clerk (office or store)	1,219	Butcher	23	Silkworker	3
Mechanic	792	Lumberman	21	Baseball player	3
Merchant	568	Miller	20	Chauffer	2
Machinist	385	Janitor	20	Stereotyper	2
Teacher	310	Motorman and conductor	16	Chiropodist	2
Dressmaker and milliner	302	Metal polisher	15	Diver	2
Miner	302	Porter	14	Bootblack	2
Factory employee	292	Contractor and builder	14	Scientist	2
Teamster	277	Theatrical person	12	Broommaker	2
Painter and paperhanger	232	Dentist	11	Chemist	2
Saloon man	171	Civil engineer	11	Weaver	2
Railroad employee	166	Mason	10	Occulist	2
Salesman or agent	165	Jeweler	9	Billposter	2
Barber	130	Hunter and trapper	9	Furniture packer	2
Cigarmaker	127	Undertaker	8	Cheesemaker	2
Printer	121	Patrolman	8	Elevator man	1
Engineer	93	Tanner	7	Steward	1
Cook	85	Glasworker	7	Plasterer	1
Sailor	80	Harnessmaker	6	Bookbinder	1
Tailor	80	Mail carrier	6	Baloonist	1
Woodsman	78	Veterinary surgeon	6	Attendant in prison or asylum.	1
Musician	66	Peddler	6	Dancing master	1
Moulder	61	Tinner	6	Prostitute	1
Shoemaker	60	Stockbuyer	6	Feather renovator	1
Nurse	59	Boomman	5	Chimney sweep	1
Artist	56	Liveryman	5	Papermaker	1
Physician or surgeon	52	Athlete	5	Milkman	1
Baker	52	Millwright	5	Sewer inspector	1
Waiter	47	Hairdresser	4	Engraver	1
Gardner or florist	43	Candymaker	4	Messenger	1
Laundry work	43	Ice man	4	Sawfiler	1
Minister	38	Upholsterer	4	Jockey	1
Electrician	34	Electrotyper	3	Shears grinder	1
Plumber	33	Brassworker	3	Newsboy	1
Lawyer	32	Carriage trimmer	3	Beanpicker	1
Stone or marble cutter	31	Buttermaker	3	Lithographer	1

TABLE 17A.—*The proportionate mortality from tuberculosis among cigarmakers and tobacco workers during the years, 1908-1910, compared with that of all persons, in Michigan, from 1903-1907, by age groups.*

Age at death.	Deaths of cigarmakers in 1908-1910, due to—		Per cent of all deaths due to tuberculosis among—	
	All causes.	Tuberculosis.	Cigarmakers, 1908-1910.	All persons in Michigan, 1903-1907.
15 to 24 years	40	19	47.5	27.1
25 to 34 years	24	12	50.0	25.8
35 to 44 years	20	6	30.0	16.6
45 to 54 years	27	2	7.4	9.4
55 to 64 years	18	1	5.6	5.1
65 years and over	13	....	....	1.5
Total	142	40	28.2	9.4

TABLE 17B.—*The proportionate mortality from tuberculosis among school teachers during the years, 1908-1910, compared with that of all persons, in Michigan, from 1903-1907, by age groups.*

Age at death.	Deaths of school teachers in 1908-1910, due to—		Per cent of all deaths due to tuberculosis among—	
	All causes.	Tuberculosis.	School teachers, 1908-1910.	All persons, in Michigan, 1903-1907.
15 to 24 years	87	31	35.6	27.1
25 to 34 years	63	33	52.4	25.8
35 to 44 years	44	10	22.7	16.6
45 to 54 years	24	3	12.5	9.4
55 to 64 years	26	2	7.7	5.1
65 years and over	50	2	4.0	1.5
Total	294	81	27.6	9.4

TABLE 17C.—*The proportionate mortality from tuberculosis among printers, for the years, 1908-1910, compared with that of all males in Michigan, from 1903-1907, by age groups.*

Age at death.	Deaths of printers in 1908-1910, due to—		Per cent of all deaths due to tuberculosis among—	
	All causes.	Tuberculosis.	Printers, 1908-1910.	All males in Michigan, 1903-1907.
15 to 24 years	29	12	41.4	21.9
25 to 34 years	23	10	43.5	23.8
35 to 44 years	13	5	38.5	16.1
45 to 54 years	18	2	11.1	9.7
55 to 64 years	9	....	....	5.0
65 years and over	18	....	....	1.5
Total	110	29	26.4	8.4

TABLE 17D.—*The proportionate mortality from tuberculosis among dressmakers for the years, 1908-1910, compared with that of all males in Michigan, from 1903-1907, by age groups.*

Age at death.	Deaths of desssmakers in 1908-1910, due to—		Per cent of all deaths due to tuberculosis among—	
	All causes.	Tuberculosis.	Dress-makers, 1908-1910.	All females in Michigan, 1903-1907.
15 to 24 years	50	19	38.0	32.6
25 to 34 years	31	16	51.6	27.7
35 to 44 years	48	6	12.5	17.1
45 to 54 years	45	1	2.2	9.0
55 to 64 years	28	1	3.6	5.3
65 years and over	36	....	....	1.1
Total	238	43	18.1	10.6

TABLE 17E.—*The proportionate mortality from tuberculosis among painters, for the year, 1908-1910, compared with that of all males in Michigan, from 1903-1907, by age groups.*

Age at death.	Deaths of painters in 1908-1910, due to—		Per cent of all deaths due to tuberculosis among—	
	All causes.	Tuberculosis.	Painters, 1908-1910.	All males in Michigan, 1903-1907.
15 to 24 years	25	10	40.0	21.9
25 to 34 years	60	29	50.0	23.8
35 to 44 years	65	15	23.1	16.1
45 to 54 years	79	9	11.4	9.7
55 to 64 years	87	7	8.0	5.0
65 years and over	113	6	5.3	1.5
Total	429	76	17.7	8.4

TABLE 17F.—*The proportionate mortality from tuberculosis among teamsters, for the years, 1908-1910, compared with that of all males in Michigan, from 1903-1907, by age groups.*

Age at death.	Deaths of teamsters in 1908-1910, due to—		Per cent of all deaths due to tuberculosis among—	
	All causes.	Tuberculosis.	Teamsters, 1908-1910.	All males in Michigan, 1903-1907.
15 to 24 years	49	15	30.6	21.9
25 to 34 years	55	11	20.0	23.8
35 to 44 years	59	9	15.3	16.1
45 to 54 years	79	10	12.7	9.7
55 to 64 years	59	3	5.1	5.0
65 years and over	69	1	1.5	1.5
Total	370	49	13.2	8.4

TABLE 17G.—*The proportionate mortality from tuberculosis among miners, for the years, 1908-1910, compared with that of all males in Michigan, from 1903-1907, by age groups.*

Age at death.	Deaths of miners in 1908-1910, due to—		Per cent of all deaths due to tuberculosis among—	
	All causes.	Tuberculosis.	Miners, 1908-1910.	All males in Michigan, 1903-1907.
15 to 24 years	212	19	8.9	21.9
25 to 34 years	255	30	11.8	23.8
35 to 44 years	171	21	12.3	16.1
45 to 54 years	106	18	17.0	9.7
55 to 64 years	77	11	14.3	5.0
65 years and over	62	8	12.9	1.5
Total	883	107	12.1	8.4

TABLE 17H.—*The proportionate mortality from tuberculosis among tailors, for the years, 1908-1910, compared with that of all persons in Michigan, from 1903-1907, by age groups.*

Age at death.	Deaths of tailors in 1908-1910, due to—		Per cent of all deaths due to tuberculosis among—	
	All causes.	Tuberculosis.	Tailors. 1908-1910.	All persons in Michigan, 1903-1907.
15 to 24 years	11	3	27.3	27.1
25 to 34 years	22	8	36.5	25.8
35 to 44 years	16	5	31.3	16.6
45 to 54 years	42	7	16.7	9.4
55 to 64 years	46	5	10.9	5.1
65 years and over	94	....	....	1.5
Total	231	28	12.1	9.4

TABLE 17I.—*The proportionate mortality from tuberculosis among carpenters, for the years, 1908-1910, compared with that of all males in Michigan, from 1903-1907, by age groups.*

Age at death.	Deaths of carpenters in 1908-1910, due to—		Per cent of all deaths due to tuberculosis among—	
	All causes.	Tuberculosis.	Carpenters, 1908-1910.	All males in Michigan, 1903-1907.
15 to 24 years	24	6	25.0	21.9
25 to 34 years	67	21	31.3	23.8
35 to 44 years	93	23	24.7	16.1
45 to 54 years	177	22	12.4	9.7
55 to 64 years	282	17	6.0	5.0
65 years and over	685	8	1.2	1.5
Total	1,328	97	7.3	8.4

DURATION OF SICKNESS IN TUBERCULOSIS.

As stated previously in this report, the time of the inception of the disease is very seldom known, therefore, it is impossible to accurately obtain the information as to the duration of tuberculosis. Owing to this fact this phase of the study was discontinued in 1909, but for the benefit of those who wish to get this information, as gathered in the past years, Table 18 is republished.

TABLE 18.—*The reported duration of sickness in 18,111 fatal and non-fatal cases of tuberculosis, in Michigan, during the fifteen years, 1894-1908.*

Duration periods.	Fatal cases.						Non-fatal cases.		
	Number.			Per cent.			Number.		
	Males.	Females.	Both sexes.	Males.	Females.	Both sexes.	Males.	Females.	Both sexes.
1 month	568	483	1,051	3.16	2.69	5.85	6	4	10
2 months	413	488	901	2.30	2.72	5.02	10	5	15
3 months	493	607	1,100	2.75	3.38	6.13	7	10	17
4 months	428	548	976	2.38	3.05	5.43	7	2	9
5 months	358	482	840	1.99	2.68	4.67	6	5	11
6 months	649	751	1,400	3.62	4.18	7.80	4	4	8
7 months	288	438	726	1.60	2.44	4.04	3	4	7
8 months	331	426	757	1.85	2.37	4.22	4	5	9
9 months	230	416	646	1.28	2.32	3.60	1	5	6
10 months	204	280	484	1.14	1.56	2.70	1	1	2
11 months	175	257	432	.97	1.43	2.40	3	1	4
Under 1 year	4,137	5,176	9,313	23.04	28.82	51.86	52	46	98
1 to 2 years	1,860	2,301	4,161	10.36	12.81	23.17	12	19	31
2 to 3 years	999	1,170	2,169	5.56	6.52	12.08	4	5	9
3 to 4 years	441	483	924	2.46	2.69	5.15	2	3	5
4 to 5 years	188	208	396	1.04	1.16	2.20	2	3	5
5 years and over	464	532	996	2.58	2.96	5.54	....	4	4
Totals	8,089	9,870	17,959	45.04	54.96	100.00	72	80	152

RESTRICTIVE AND PREVENTIVE MEASURES.

The disinfection of sputa, upon which the restriction of tuberculosis depends, was properly carried out in but forty-five per cent of all the cases which occurred in the years 1904-1910; that is to say, in the majority (fifty-five per cent) of these cases the tuberculous sick neglected the most important measure for preventing the spread of this disease. Now, while during the past twelve years there has been a downward trend in the death rates from tuberculosis—a reduction undoubtedly due to the observance of the restrictive measures recommended by this Department—yet, the above-mentioned fact that fifty-five per cent of the tuberculous are still neglecting the destruction of the sputa can only testify that the observance of the preventive measures is by no means as general as it should be, and that the reduction of the disease is not commensurate with the positive knowledge we have regarding the mode of its prevention. This may be explained, partly, by the failure of a large number of persons to obtain an early diagnosis, and who, therefore, through promiscuous spitting, etc., are sources of spreading tuberculosis. Furthermore, the failure of this fifty-five per cent to destroy the sputa may be due to lack of cooperation on the part of the physicians and health officers, whereby the tuberculous remain uninstructed regarding the necessary precautions and unsupervised regarding their observance.

That the local board of health and the practicing physicians, in every locality, have a responsibility in the task of suppressing tuberculosis, is evident. Again, this fifty-five per cent undoubtedly contains those cases where both physician and health officer urge the destruction of the sputa, but where the patient, through carelessness, prejudice or poverty, neglects to observe that measure; and for such cases the only effectual control will be institutional care in a hospital conducted for the care of the tuberculous.

TABLE 19.—*Restrictive and preventive measures in tuberculosis, in Michigan, in the seven years, 1904-1910.*

Restrictive and preventive measures.	Number of cases.	Per cent.
DISINFECTION OF SPUTA:		
Enforced	8,940	*44
Neglected	998	*5
Not stated or statements doubtful	10,587	*51
DISINFECTION OF SOILED BEDDING, CLOTHING, ETC.:		
Enforced	11,603	54
Neglected	777	4
Not stated or statements doubtful	9,033	42
DISINFECTION OF DISCHARGES FROM BOWELS AND BLADDER:		
Enforced	620	†48
Neglected	296	†23
Not stated or statements doubtful	376	†29
DISINFECTION OF ROOMS OCCUPIED BY PATIENTS:		
Enforced	11,143	52
Neglected	1,407	7
Not stated or statements doubtful	8,863	41

*Disinfection of the sputa was not considered necessary in 888 instances, in which there was said to be no sputa, or in which the disease was said to be located only in the bowels, stomach, liver, etc., therefore this number has been deducted from the 21,413 cases, reported during the seven years, before making the per cent.

†Disinfection of the bowel discharges was considered necessary in but 1,292 instances, i. e., where the disease was located solely, or in combination with some other organ, in the bowels, or in some other part of the body from which infection might leave the body by way of the bowels or bladder.

BACTERIOLOGICAL DIAGNOSIS IN TUBERCULOSIS.

During the sixteen years, 1895-1910, reports relative to the bacteriological examination of 4,199 samples of sputa of suspected cases of tuberculosis indicate that 94 per cent gave positive and 6 per cent gave negative results.

MENINGITIS IN MICHIGAN IN 1910 AND PRECEDING YEARS.

GENERAL PREVALENCE.

During the year 1910, meningitis was reported present, at some time during the year, from 120 localities, in which there were reported to have occurred 522 cases, including 503 deaths from this disease.

Owing to the fact that, in 1910, tubercular meningitis was compiled as tuberculosis instead of meningitis, as heretofore, the number of cases and deaths from meningitis is, of course, less than in preceding years.

By Table 20, it will be seen that, in 1899, when the statistical study of meningitis was first commenced by this Department, the disease was unusually prevalent, therefore, the average of series of years beginning in 1899 is higher than it would be for similar periods under normal conditions.

TABLE 20.—*The prevalence of meningitis, in Michigan, in each of the twelve years, 1899-1910.*

Years.	Population.*	Number of cases.†	Number of deaths.	Deaths per 100,000 population.
1899	2,426,331	1,306	1,079	44.5
1900	2,420,982	747	688	28.4
1901	2,448,241	614	594	24.3
1902	2,475,499	632	598	24.2
1903	2,502,758	645	630	25.2
1904	2,530,016	598	586	23.2
1905	2,557,275	675	646	25.3
1906	2,584,533	650	627	24.3
1907	2,611,792	680	670	25.7
1908	2,639,050	622	612	23.2
1909	2,666,309	577	575	21.6
1910	2,810,173	522	503	17.9
Average	2,556,080	689	651	25.5

*Estimated for intercensal years.

†From many localities only the fatal cases were reported, so that the figures in this column do not accurately represent the number of cases which occurred.

Table 20 shows a much greater average death rate from meningitis in the years in which efforts have been made for its restriction and prevention than the average death rate for a long series of years prior to that time, as shown in Table 21. This is probably due to the fact that, prior to 1898, under the old law for the registration of deaths, not all deaths were reported, and to the fact that the rates in Table 21 do not include tubercular meningitis, which, in recent years, has caused about 15 per cent of all deaths from meningitis.

TABLE 21.—*The number of reported deaths from meningitis,* in Michigan, per 100,000 persons living, in each of the thirty years, 1869-1898. Compiled from the Secretary of State's Vital Statistics of Michigan.*

Years	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.
Deaths	1.2	.9	2.0	28.6	62.6	13.9	12.0	8.6	9.3	7.2	6.6	9.7
Years	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.
Deaths	19.6	13.0	12.7	12.8	9.2	9.4	9.3	9.6	8.0	8.6	9.6	6.8
Years	1893.	1894.	1895.	1896.	1897.	1898.†	Average, 1869-1898.					
Deaths	7.8	8.1	7.8	8.3	9.7	28.4	12.0					

*Does not include tubercular meningitis.

†Not all the deaths were reported under the old law, therefore a comparison of death rates for any year subsequent to 1897 with the death rates for any period prior to 1898 would not be reliable. The rates for the twenty-nine years ending with 1897, probably quite accurately represent the annual fluctuations of the disease.

THE PREVALENCE OF MENINGITIS IN URBAN AND RURAL LOCALITIES.

Table 22 shows meningitis to have been present, in 1910, in 13 per cent of the incorporated health jurisdictions of the State.

As in the case of pneumonia and tuberculosis, previously considered, meningitis was most prevalent in the large centers of population.

By Table 22A, it may be seen that, in 1910, the urban localities that showed much higher death rates from meningitis than the death rate for this disease for the entire State (17.9) for that year, were: Adrian, Albion, Battle Creek, Bay City, Cheboygan, Detroit, Dowagiac, Escanaba, Grand Haven, Hancock, Jackson, Kalamazoo, Laurium, Ludington, Manistee, Mt. Clemens, Saginaw, St. Joseph, Sault Ste. Marie, Wyandotte and Ypsilanti.

The localities, shown in Table 22A, in which the death rates were much lower in 1910 from meningitis than the rate for the entire State for that year were: Alpena. Lansing, Marquette, Menominee, Negaunee, Owosso, Pontiac and Port Huron.

The localities, shown in Table 22A, which showed much higher death rates from meningitis in 1910 than the average for such localities in the years 1904-1909, were: Bay City, Cheboygan, Dowagiac, Grand Haven, Ludington, Manistee, Mt. Clemens, St. Joseph and Ypsilanti.

The localities, shown in Table 22A, which showed much lower death rates from meningitis in 1910 than the average for such localities in the years 1904-1909, were: Alpena, Ann Arbor, Benton Harbor, Boyne City, Cadillac, Calumet township, Coldwater, Flint, Grand Rapids, Hancock, Hillsdale, Holland, Houghton, Iron Mountain, Ironwood, Ishpeming, Lansing, Marquette, Menominee, Monroe, Muskegon, Negaunee, Niles, Owosso, Pontiac, Port Huron, Three Rivers and Traverse City.

TABLE 22.—*The prevalence of meningitis in urban and rural localities, in Michigan, in 1910.*

Localities—Grouped according to density of population.	Population.	Health jurisdictions.			Cases.*	Deaths.	Death rates per 100,000 of the population.
		Total.	Infected.				
			Number.	Per cent of all jurisdictions.			
Cities over 50,000	628,847	3	3	100	191	188	29.9
Cities from 25,000 to 50,000	211,082	6	6	100	49	48	22.7
Cities from 10,000 to 25,000 and Calumet township (20,097)	223,916	16	14	88	35	35	15.6
Cities and villages from 5,000 to 10,000	166,749	24	15	63	39	37	22.2
Cities and villages under 5,000	402,408	388	49	13	57	52	12.9
Total urban	1,633,002	437	87	20	371	360	22.0
Rural localities—Townships†	1,177,171	1,235	133	11	151	143	12.1

*From many localities only the fatal cases were reported, therefore, these figures do not represent the number of cases that actually occurred.

†Exclusive of Calumet township, which, for the purpose of this study, is included in the third group of urban localities which have corresponding populations.

TABLE 22A.—*The deaths from meningitis in 1910, and preceding years, in each of the principal localities included in the first four groups in Table 22.*

Localities.	1910.			Average, 1904-1909.		
	Population.	Deaths.	Deaths per 100,000 inhabitants.	Population.*	Deaths.	Deaths per 100,000 inhabitants.
Adrian	10,763	3	27.9	11,322	3	26.5
Albion	5,833	2	34.3	5,208	2	38.4
Alpena	12,706	1	7.9	12,774	3	23.5
Ann Arbor	14,817	2	13.5	14,654	5	34.1
Battle Creek	25,267	6	23.7	24,495	5	20.4
Bay City	45,166	12	26.6	40,575	7	17.3
Benton Harbor	9,185	0	....	6,790	1	14.7
Boyne City	5,218	0	....	3,416	1	29.3
Cadillac	8,375	0	....	7,453	2	26.8
Calumet township	20,097	3	14.9	17,949	11	61.3
Cheboygan	6,859	4	58.3	6,881	3	43.6
Coldwater	5,945	0	....	6,231	2	32.1
Detroit	465,766	155	33.3	343,137	109	31.8
Dowagiac	5,088	2	39.3	4,562	1	21.9
Escanaba	13,194	4	30.3	12,066	4	33.2
Flint	38,550	8	20.8	15,997	5	31.3
Grand Haven	5,856	3	51.2	5,549	.5	9.0
Grand Rapids	112,571	19	16.9	100,814	29	28.8
Hancock	8,981	3	33.4	7,279	4	55.0
Hillsdale	5,001	0	....	5,221	.3	5.7
Holland	10,490	0	....	9,701	2	20.6
Houghton	5,113	0	....	4,963	.8	16.1
Ionia	5,030	1	19.9	5,230	1	19.1
Iron Mountain	9,216	2	21.7	8,174	3	36.7
Ironwood	12,821	2	15.6	10,216	3	29.4
Ishpeming	12,448	2	16.1	10,603	8	75.5
Jackson	31,433	9	28.6	25,375	7	27.6
Kalamazoo	39,437	10	25.4	33,143	9	27.2
Lansing	31,229	3	9.6	22,646	3	13.2
Laurium	8,537	2	23.4	8,910	2	22.4
Ludington	9,132	5	54.8	7,317	2	27.3
Manistee	12,381	4	32.3	11,738	3	25.6
Marquette	11,503	1	8.7	11,045	2	18.1
Menominee	10,507	1	9.5	10,020	4	39.9
Monroe	6,893	0	....	6,806	2	29.4
Mt. Clemens	7,707	2	26.0	7,441	.8	10.8
Muskegon	24,064	5	20.8	20,946	6	28.6
Negaunee	8,460	1	11.8	6,711	4	59.6
Niles	5,156	0	....	4,863	1	20.6
Owosso	9,639	1	10.4	9,426	2	21.2
Pontiac	14,532	1	6.9	11,581	2	17.3
Port Huron	18,863	2	10.6	20,572	4	19.4
Saginaw	50,510	14	27.7	49,276	14	28.4
St. Joseph	5,936	3	50.5	5,427	1	18.4
Sault Ste. Marie	12,615	4	31.7	12,007	4	33.3
Three Rivers	5,072	0	....	4,140	2	48.3
Traverse City	12,115	0	....	12,381	3	24.2
Wyandotte	8,287	4	48.3	5,577	3	53.8
Ypsilanti	6,230	2	32.1	7,718	1	13.0

*Estimated for intercensal years.

THE SEASONAL PREVALENCE OF MENINGITIS.

Table 23 is compiled from two different sources, and shows that meningitis is most prevalent in the months of March, April and May, and least prevalent in the months of October, November and December.

TABLE 23.—*The seasonal prevalence of meningitis, in Michigan, in so far as indicated by the average number of persons taken sick and who died from this disease in each month in the twelve years, 1899-1910.*

Months.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Average number of those taken sick.	40	42	63	60	50	37	40	41	38	33	29	28
Average number of deaths.........	40	49	63	67	58	46	47	48	44	38	34	35

REPORTED SOURCES OF CONTAGIUM AND PREDISPOSING INFLUENCES IN MENINGITIS.

For the reason that, since 1906, the number of instances in which the sources of contagium and predisposing influences in meningitis reported were very small, as compared to the total number of cases of meningitis, health officers were requested to supply information only relative to those cases which were traced to former cases of the disease, or which followed the four diseases, shown in Table 24 of this article, which are intimately associated with meningitis.

TABLE 24.—*The reported source of contagium and predisposing influences in meningitis, in Michigan, in the twelve years, 1899-1910.*

Source and predisposing influences.	Number of instances.
Traced to a former case..	83
Following an attack, in the same person, of:	
Influenza..	150
Pneumonia..	112
Tuberculosis..	79
Bronchitis..	42

INFLUENCE OF AGE AND SEX IN MENINGITIS.

Table 25 confirms what has been stated in preceding reports relative to meningitis, that it is essentially a disease of childhood, nearly 57 per cent of the fatal cases in which the age was stated, during the twelve years ending in 1910, having occurred in children under five years of age. There was a gradual decrease in the number of deaths corresponding with each increase in age, up to the fiftieth year.

With but two exceptions, ages 5 to 9 and 10 to 14 years, meningitis was more fatal among the male population at all ages shown in the table.

THE DURATION OF SICKNESS IN MENINGITIS.

Table 26 shows that of the 4,494 fatal cases of meningitis, in which the duration of sickness was reported, in the ten years, 1901-1910, 39 per cent of the deaths occurred between the first and fifth days; 64 per cent between the first and tenth days and nearly 78 per cent between the first and fifteenth days.

TABLE 25.—*The influence of age and sex in meningitis, in Michigan, as indicated by the number of those, of known ages, who died from this disease in the twelve years, 1899-1910. Arranged by sex, in age periods of five years each.*

Age periods.	Number of deaths.			Per cent.			Average deaths per year.		
	Males.	Females.	Both sexes.	Males.	Females.	Both sexes.	Males.	Females.	Both sexes.
Under 5 years	2,467	1,935	4,402	31.92	25.04	56.96	206	161	367
5 to 9 years	416	432	848	5.38	5.59	10.97	35	36	71
10 to 14 years	236	249	485	3.06	3.22	6.28	20	21	41
15 to 19 years	247	200	447	3.19	2.59	5.78	21	17	38
20 to 24 years	162	132	294	2.09	1.71	3.80	14	11	25
25 to 29 years	115	107	222	1.49	1.38	2.87	10	9	19
30 to 34 years	99	81	180	1.28	1.05	2.33	8	7	15
35 to 39 years	98	74	172	1.27	.96	2.23	8	6	14
40 to 44 years	85	61	146	1.10	.79	1.89	7	5	12
45 to 49 years	77	54	131	1.00	.70	1.70	6	5	11
50 years and over	250	151	401	3.23	1.96	5.19	21	13	34
All ages	4,252	3,476	7,728	55.01	44.99	100.00	354	290	644

TABLE 26.—*The duration of sickness in fatal cases of meningitis, of known duration in Michigan, in the ten years, 1901-1910. Arranged by sex in five day periods.*

Duration periods.	Number of deaths.			Per cent.			Average deaths per year.		
	Males.	Females.	Both sexes.	Males.	Females.	Both sexes.	Males.	Females.	Both sexes.
1 to 5 days	1,010	749	1,759	22.47	16.67	39.14	101	75	176
6 to 10 days	575	540	1,115	12.79	12.02	24.81	58	54	112
11 to 15 days	340	313	653	7.57	6.96	14.53	34	31	65
16 to 20 days	139	151	290	3.09	3.36	6.45	14	15	29
21 to 25 days	127	113	240	2.83	2.51	5.34	13	11	24
26 to 30 days	58	57	115	1.29	1.27	2.56	6	6	12
31 to 35 days	31	28	59	.69	.62	1.31	3	3	6
36 to 40 days	21	19	40	.47	.42	.89	2	2	4
41 to 45 days	20	14	34	.45	.31	.76	2	1	3
46 to 50 days	10	12	22	.22	.27	.49	1	1	2
51 days and over	87	80	167	1.94	1.78	3.72	9	8	17
Totals	2,418	2,076	4,494	53.81	46.19	100.00	242	208	450

RESTRICTIVE AND PREVENTIVE MEASURES IN MENINGITIS.

As may be seen, by reference to Table 27, information relative to the restrictive and preventive measures in meningitis has been very meagre. As indicated by those reports in which a definite statement was made relative to the restrictive and preventive measures in meningitis in the seven years, 1904-1910, only 28 per cent of the patients were isolated from all persons excepting the nurses and attending physicians. Practically the same showing is made in regard to the disinfection of the sputa. The disinfection of bedding, clothing, etc., liable to be soiled by the sputa, was carried out in 49 per cent of the instances, and the disinfection of the rooms was enforced in 57 per cent of the cases.

TABLE 27.—*Restrictive and preventive measures in meningitis, in Michigan, in the seven years*, 1904-1910.

Restrictive and preventive measures.	Number of cases.	Per cent.
ISOLATION:		
Enforced	1,207	28
Neglected	920	21
Not stated or statements doubtful	2,197	51
DISINFECTION OF SPUTA:		
Enforced	1,290	*31
Neglected	516	*13
Not stated or statements doubtful	2,287	*56
DISINFECTION OF BEDDING, CLOTHING, ETC., SOILED BY SPUTA:		
Enforced	1,998	*49
Neglected	410	*10
Not stated or statements doubtful	1,685	*41
DISINFECTION OF ROOM OCCUPIED BY PATIENT:		
Enforced	2,461	57
Neglected	519	12
Not stated or statements doubtful	1,344	31

*Two hundred and thirty-one cases, in which there was said to be no sputa, excluded in making these per cents.

TYPHOID FEVER IN MICHIGAN IN 1910 AND PRECEDING YEARS.

GENERAL PREVALENCE.

By Table 28 it may be seen that, in 1910, the number of reported cases of typhoid fever was greater than in 1909, and the number of deaths a few less.

A comparison of Table 28 with Table 29 will show that the average death rate from typhoid fever in the years since 1884—when active measures for its restriction were instituted by this Department—is considerably lower than in the fifteen years preceding 1884. It will also be seen that, in the years, 1884-1897, inclusive, as a rule, the annual death rates were much lower than the rates in subsequent years. The higher death rates in the years, 1898-1910, may be accounted for, partly, by the fact that, prior to 1898, under the old law for registration of deaths, not all deaths were reported. It will be seen, however, that, in the thirteen years ending with 1910, the death rates from typhoid fever have not decreased, as would be expected from the efforts put forth by this Department for the restriction of the disease. This is believed to be due to the fact that, in many localities having public water supplies, there has been little, if any, provision made for the removal of the sewage, necessitating a gradually increasing number of cesspools and resulting in a gradually increasing contamination of the underground bodies of water from which many persons in those localities derive their water supplies.

It is safe to say that no substantial decrease in the sickness and mortality from typhoid fever may be expected until every cesspool and shallow well shall have been abolished and every public water supply permanently protected against contamination.

TABLE 28.—*The prevalence of typhoid fever, in Michigan, in each of the twenty-seven years, 1884-1910.*

Years.	Population.*	Reported cases.†	Reported deaths.	Deaths per 100 cases.	Deaths per 100,000 population.
1884	1,853 658	969	290	27	15.6
1885	1,893,697	715	194	23	10.2
1886	1,933,735	1,194	282	18	14.6
1887	1,973,774	3,424	411	17	20.8
1888	2,013,812	1,511	310	21	15.4
1889	2,053,851	2,530	681	27	33.2
1890	2,093,889	1,924	304	16	14.5
1891	2,130,827	4,670	697	15	32.7
1892	2,167,765	2,591	538	21	24.8
1893	2,204,703	3,512	594	17	26.9
1894	2,241,641	2,805	506	18	22.6
1895	2,271,531	3,751	621	17	27.3
1896	2,301,421	2,506	409	16	17 8
1897	2,331,311	1,900	352	19	15.1
1898	2,361,201	2,874	634	24	26.9
1899	2,391,091	3,194	638	20	26.7
1900	2,420,982	5,122	920	18	38.0
1901	2,450,872	3,002	665	22	27.1
1902	2,475,499	2,456	596	24	24.1
1903	2,502,758	2,840	640	23	28.9
1904	2,530,016	3,028	731	24	29.7
1905	2,557,275	2,774	661	24	25.8
1906	2,584,533	3,163	785	25	30.4
1907	2,611,792	1,953	645	33	24.7
1908	2,639,050	2,656	729	27	27.6
1909	2,666,309	2,694	692	26	26.0
1910	2,810,173	3,361	681	20	24.2
Average per year	2,313,599	2,708	563	21	24.3

*Estimated for intercensal years.

†From many localities only the fatal cases were reported, so that the figures in this column do not represent the number of cases that actually occurred.

TABLE 29.—*The number of deaths from typhoid fever,* in Michigan, per 100,000 persons living, in each of the fifteen years, 1869-1883. Compiled from reports to the Secretary of State.*

Years	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	Average. 1869–1883.
Deaths	39.0	48.5	29.2	49.4	52.8	45.8	31.3	30.1	30.3	22.6	25.5	31.9	55.2	28.4	25.0	36.3

*Includes typho-malarial fever but not typhoid pneumonia.

GEOGRAPHICAL DISTRIBUTION.

By Table 30 it may be seen that, as compared with the average death rate for the State as a whole for the years 1891-1910 (26.4 per 100,000 population), the disease was unusually prevalent in the Upper Peninsular division. By the same comparison, the disease was unusually prevalent in the counties of Baraga, Chippewa, Delta, Gogebic, Luce, Marquette, Menominee, Wexford, Otsego, Kent, Midland, Missaukee and Ingham.

TABLE 30.—*The geographical distribution of typhoid fever, in Michigan, in the twenty years, 1891-1910, as indicated by the average number of cases and deaths, and the average deaths per 100-000 persons living, in each geographical division shown in the table.*

Geographical Divisions.	Average.			
	Population.*	Cases.†	Deaths.	Death rates.
Upper Peninsular Division	251,865	522	88.2	35.0
Alger county	5,150	3	.8	15.6
Baraga county	4,920	21	2	40.7
Chippewa county	19,580	50	8	40.9
Delta county	24,310	43	14	57.6
Dickinson county	17,489	29	4	22.9
Gogebic county	16,504	71	7	42.4
Houghton county	60,733	76	14	23.1
Iron county	7,977	10	2	25.1
Keweenaw county	3,925	4	.7	17.8
Luce county	3,283	5	2	60.9
Mackinac county	7,906	4	.7	8.9
Marquette county	39,934	122	17	42.6
Menominee county	25,229	52	12	47.6
Ontonagon county	6,751	15	2	29.6
Schoolcraft county	8,174	17	2	24.5
Northwestern Division	85,789	118	23	26.8
Benzie county	9,863	21	3	30.4
Grand Traverse county	21,228	40	6	28.3
Leelanau county	10,361	5	2	19.3
Manistee county	26,946	27	6	22.3
Wexford county	17,391	25	6	34.5
Northern Division	76,329	105	20.5	26.9
Antrim county	14,378	18	4	27.8
Charlevoix county	14,377	14	3	20.9
Cheboygan county	16,111	18	3	18.6
Crawford county	3,405	5	.5	14.7
Emmet county	14,967	26	5	33.4
Kalkaska county	6,846	9	2	29.2
Otsego county	6,245	15	3	48.0
Northeastern Division	57,680	48	13.5	23.4
Alcona county	5,600	4	.8	14.3
Alpena county	19,200	13	5	26.0
Iosco county	11,238	8	3	26.7
Montmorency county	3,154	2	.6	19.0
Ogemaw county	7,687	8	2	26.0
Oscoda county	1,899	3	.1	5.3
Presque Isle county	8,902	10	2	22.5
Western Division	274,163	417	77	28.1
Kent county	134,072	293	46	34.3
Lake county	5,406	6	1	18.5
Mason county	19,478	18	6	30.8
Muskegon county	37,532	27	7	18.7
Newaygo county	18,810	19	5	26.6
Oceana county	17,442	23	4	22.9
Ottawa county	41,423	31	8	19.3
Northern Central Division	107,557	142	26.3	24.5
Clare county	8,780	11	2	22.8
Gladwin county	7,152	11	1	14.0
Isabella county	23,233	33	5	21.5
Mecosta county	25,543	22	6	23.5
Midland county	14,227	26	5	35.1
Missaukee county	9,049	20	3	33.2
Osceola county	17,871	17	4	22.4
Roscommon county	1,702	2	.3	17.6

*†These footnotes are below Table 28, on a preceding page.

TABLE 30.—CONCLUDED.

Geographical Divisions.	Average.			
	Population.*	Cases.†	Deaths.	Death rates.
BAY AND EASTERN DIVISION	343,992	377	84.8	24.7
Arenac county	8,857	6	.8	9.0
Bay county	63,475	53	20	31.5
Huron county	34,180	29	6	17.6
Lapeer county	27,746	32	6	21.6
Saginaw county	84,725	70	16	18.9
Sanilac county	34,589	49	10	28.9
St. Clair county	54,960	100	18	32.8
Tuscola county	35,460	38	8	22.6
CENTRAL DIVISION	316,765	426	80	25.3
Barry county	22,749	21	3	13.2
Clinton county	25,541	39	7	27.4
Eaton county	31,548	44	7	22.2
Genesee county	43,000	57	11	25.6
Gratiot county	29,808	42	8	26.8
Ingham county	42,778	93	16	37.4
Ionia county	34,814	42	9	25.9
Livingston county	19,292	22	4	20.7
Montcalm county	33,743	27	8	23.7
Shiawassee county	33,492	39	7	20.9
SOUTHWESTERN DIVISION	141,245	156	32	22.7
Allegan county	39.143	29	7	17.9
Berrien county	48,320	51	12	24.8
Cass county	20,523	24	4	19.5
Van Buren county	33,259	52	9	27.1
SOUTHERN CENTRAL DIVISION	320,205	391	69	21.5
Branch county	26,122	29	6	23.0
Calhoun county	51,227	69	13	25.4
Hillsdale county	29,963	26	5	16.7
Jackson county	47,262	78	12	25.4
Kalamazoo county	47,451	80	11	23.2
Lenawee county	48,839	59	11	22.5
St. Joseph county	24,098	20	4	16.6
Washtenaw county	45,243	30	7	15.5
SOUTHEASTERN DIVISION	468,588	324	120	25.6
Macomb county	32,788	39	8	24.4
Monroe county	33,092	38	7	21.2
Oakland county	44,718	34	8	17.9
Wayne county	357,990	213	97	27.1

*†These footnotes are below Table 28, on a preceding page.

THE PREVALENCE OF TYPHOID FEVER IN URBAN AND RURAL LOCALITIES.

Table 31 indicates that, in 1910, typhoid fever was much more prevalent in urban than in rural localities.

In urban localities typhoid fever was most prevalent in the group of localities having populations of from 25,000 to 50,000 and least prevalent in the group having under 5,000 inhabitants.

The localities in each of the first four groups in Table 31, together with the reported cases and deaths from typhoid fever in each locality in 1910, and in the average year, are shown in Table 31A.

By Table 31A it may be seen that, in 1910, the urban localities which showed much higher death rates from typhoid fever than the death rate for this disease for the entire State for that year were: Albion, Alpena, Ann Arbor, Battle Creek, Cadillac, Dowagiac, Escanaba, Flint, Hancock, Hillsdale, Jackson, Kalamazoo, Lansing, Marquette, Menominee, Mt. Clemens, Negaunee, Niles, Owosso, Pontiac, Port Huron, St. Joseph and Wyandotte.

The localities, shown in Table 31A, in which the death rates from typhoid fever were much lower in 1910 than the rate for the entire State for that year were: Calumet township, Coldwater, Ironwood, Ishpeming and Monroe.

The localities, shown in Table 31A, which showed much higher death rates from Typhoid fever in 1910 than the average for such localities in the years 1904-1909, were: Albion, Ann Arbor, Cadillac, Cheboygan, Coldwater, Flint, Hancock, Hillsdale, Marquette, Negaunee, Niles, Owosso, Pontiac, Port Huron, St. Joseph and Ypsilanti.

The localities, shown in Table 31A, which showed much lower death rates frem typhoid fever in 1910 than the average for such localities in the years 1904-1909, were: Adrian, Bay City, Calumet township, Escanaba, Grand Rapids, Ionia, Ironwood, Ludington, Menominee, Sault Ste. Marie and Traverse City.

By Table 31B is shown the number of cases of typhoid fever that would have been expected to occur in 1910, in cities over 5,000 inhabitants, according to an estimated rate of ten cases to one death.

TABLE 31.—*The prevalence of typhoid fever, in urban and rural localities, in Michigan, in 1910.*

Localities—Grouped according to density of population.	Population.	Health jurisdictions.			Cases.*	Deaths.	Death rates per 100,000 of the population.
		Total.	Infected. Number.	Infected. Per cent of all jurisdictions.			
Cities over 50,000	628,847	3	3	100	910	148	23.5
Cities from 25,000 to 50,000	211,082	6	6	100	543	98	46.4
Cities from 10,000 to 25,000 and Calumet township (20,097)	223,916	16	16	100	333	83	37.1
Cities and villages from 5,000 to 10,000	166,749	24	21	88	254	61	36.6
Cities and villages under 5,000	402,408	388	149	38	446	82	20.4
Total urban	1,633,002	437	195	45	2,486	472	28.9
Rural localities—Townships†	1,177,171	1,235	403	33	875	209	17.8

*From many localities only the fatal cases were reported, therefore, these figures do not represent the number of cases that actually occurred.

†Exclusive of Calumet township, which, for the purpose of this study, is included in the third group of urban localities which have corresponding populations.

TABLE 31A.—*The prevalence of typhoid fever in 1910, and preceding years, in each of the principal localities included in the first four groups in Table 31.*

Localities.	1910.				Average, 1904-1909.			
	Population.	Cases.	Deaths.	Deaths per 100,000 inhabitants.	Population.*	Cases.	Deaths.	Deaths per 100,000 inhabitants.
Adrian	10,763	†	2	18.6	11,322	6	3	26.5
Albion	5,833	5	2	34.3	5,208	5	.3	5.8
Alpena	12,706	†	5	39.4	12,774	‡17	6	47.0
Ann Arbor	14,817	13	6	40.5	14,654	10	2	13.6
Battle Creek	25,267	33	8	31.6	24,495	43	9	36.7
Bay City	45,166	28	11	24.4	40,575	†	19	46.8
Benton Harbor	9,185	15	2	21.8	6,790	8	2	29.5
Boyne City	5,218	4	1	19.2	3,416	3	.8	23.4
Cadillac	8,375	21	7	83.6	7,453	18	3	40.3
Calumet township	20,097	3	1	5.0	17,949	21	3	16.7
Cheboygan	6,859	12	2	29.2	6,881	4	.8	11.6
Coldwater	5,945	9	1	16.8	6,231	4	.5	8.0
Detroit	465,766	634	105	22.5	343,137	†	88	25.6
Dowagiac	5,088	6	2	39.3	4,562	13	2	43.8
Escanaba	13,194	†	8	60.6	12,066	†	24	198.9
Flint	38,550	206	41	106.4	15,997	§51	10	62.6
Grand Haven	5,856	1	0	....	5,549	4	1	18.0
Grand Rapids	112,571	238	31	27.5	100,814	357	41	40.7
Hancock	8,981	†	5	55.7	7,279	†	3	41.2
Hillsdale	5,001	32	3	60.0	5,221	6	1	19.2
Holland	10,490	2	0	....	9,701	9	1	10.3
Houghton	5,113	0	0	....	4,963	†	.3	6.0
Ionia	5,030	4	1	19.9	5,230	8	2	38.2
Iron Mountain	9,216	0	0	....	8,174	†	1	12.2
Ironwood	12,821	3	2	15.6	10,216	†	6	58.7
Ishpeming	12,448	5	2	16.1	10,603	7	2	18.9
Jackson	31,433	60	10	31.8	25,375	70	9	35.5
Kalamazoo	39,437	101	13	33.0	33,143	61	9	27.2
Lansing	31,229	115	15	48.0	22,646	¶51	11	48.6
Laurium	8,537	†	2	23.4	8,910	†	2	22.4
Ludington	9,132	20	2	21.9	7,317	¶8	3	41.0
Manistee	12,381	19	3	24.2	11,738	15	3	25.6
Marquette	11,503	34	11	95.6	11,045	16	6	54.3
Menominee	10,507	23	7	66.6	10,020	†	10	99.8
Monroe	6,893	20	1	14.5	6,806	4	1	14.7
Mt. Clemens	7,707	†	3	38.9	7,441	†	3	40.3
Muskegon	24,064	28	6	24.9	20,946	21	5	23.9
Negaunee	8,460	41	6	70.9	6,711	16	3	44.7
Niles	5,156	7	2	38.8	4,863	7	.7	14.4
Owosso	9,639	8	3	31.1	9,426	4	2	21.2
Pontiac	14,532	59	10	68.8	11,581	†	3	25.9
Port Huron	18,863	64	14	74.2	20,572	22	8	38.9
Saginaw	50,510	38	12	23.8	49,276	48	16	32.5
St. Joseph	5,936	†	6	101.1	5,427	4	1	18.4
Sault Ste. Marie	12,615	30	3	23.8	12,007	21	6	50.0
Three Rivers	5,072	0	0	....	4,140	2	.2	4.8
Traverse City	12,115	34	3	24.8	12,381	51	6	48.5
Wyandotte	8,287	17	8	96.5	5,577	31	6	107.6
Ypsilanti	6,230	15	2	32.1	7,718	4	.8	10.4

*Estimated for intercensal years.

†Fatal cases only reported.

‡Average for two years only.

§Average for four years only.

¶Average for five years only.

TABLE 31B.—*The number of cases and deaths from typhoid fever reported from each of the localities of 5,000 inhabitants and over, in Michigan, in 1910, together with the fatality (deaths per 100 reported cases) and the number of cases that would be expected to occur according to a rate of 10 deaths to each 100 cases.*

Localities.	Reported cases.	Deaths.	Deaths per 100 reported cases.	The expected number of cases.
Adrian	2	2	100	20
Albion	5	2	40	20
Alpena	7	5	71	50
Ann Arbor	13	6	46	60
Battle Creek	33	8	24	80
Bay City	28	11	39	110
Benton Harbor	15	2	13	20
Boyne City	4	1	25	10
Cadillac	21	7	33	70
Calumet township	3	1	33	10
Cheboygan	12	2	17	20
Coldwater	9	1	11	10
Detroit	634	105	17	1,050
Dowagiac	6	2	33	20
Escanaba	8	8	100	80
Flint	206	41	20	410
Grand Rapids	238	31	13	310
Hancock	6	5	83	50
Hillsdale	32	3	9	30
Ionia	4	1	25	10
Ironwood	3	2	67	20
Ishpeming	5	2	40	20
Jackson	60	10	17	100
Kalamazoo	101	13	13	130
Lansing	115	15	13	150
Laurium	2	2	100	20
Ludington	20	2	10	20
Manistee	19	3	16	30
Marquette	34	11	32	110
Menominee	23	7	30	70
Monroe	20	1	5	10
Mt. Clemens	3	3	100	30
Muskegon	28	6	21	60
Negaunee	41	6	15	60
Niles	7	2	29	20
Owosso	8	3	38	30
Pontiac	59	10	17	100
Port Huron	64	14	22	140
Saginaw	38	12	32	120
St. Joseph	6	6	100	60
Sault Ste. Marie	30	3	10	30
Traverse City	34	3	9	30
Wyandotte	17	8	47	80
Ypsilanti	15	2	13	20
Total	2,038	390	19	3,900

THE REPORTED SOURCES OF CONTAGIUM IN TYPHOID FEVER.

In the twenty years, 1891-1910, over sixty-six per cent of all the cases of typhoid fever were not traced to their source. This is to be regretted, because if in any outbreak of typhoid fever the source of the disease is promptly located and removed, and proper measures taken to prevent the further spread of the disease from the sick person, or persons, the disease may usually be restricted to those persons who were infected prior to the recognition of the disease at the beginning of the outbreak.

Of the cases of typhoid fever in which a source of contagium was given, as shown in Table 32, over 56 per cent were said to be due to water or ice. This number would undoubtedly be greater if the sources of all the cases were traced.

The comparatively large number of cases in which the infection was traced to outside jurisdictions included, principally, those cases in which the patients were taken sick in a camp, or other place away from home, and were removed to their homes, or to a hospital, in other health jurisdictions, to be cared for. The removal, from one locality to another, of a person suffering from typhoid fever is a dangerous practice, and is unlawful, unless the same is done with the consent and under the supervision of the health officials of the locality to which the patient is to be removed.

The 2,864 cases which were said to be due to coming in contact with or nursing typhoid fever patients were probably due, in the main, to the neglect of proper precautions on the part of those in attendance upon the patients. Where the utmost care and cleanliness is observed by those in charge of cases of typhoid fever, cases due to secondary infection should be of rare occurrence. It often happens, however, that the nursing is done by some member of the family, who may also handle food, or assist in the preparation of meals, to be eaten by herself and other members of the family; and the hands may not always be disinfected and cleansed between the act of caring for the patient and the handling of the food.

It is probable that many of the cases of typhoid fever which occurred in the same household, camp, etc., and which were reported as due to secondary infection, were really due to the same source as the original case, or to primary infection.

An insanitary condition of premises, on which a case of typhoid fever occurred, would be considered a cause of typhoid fever only insofar as it might assist in the development and distribution of the germs of the disease. Thus, a badly constructed or neglected privy or cesspool might be an eyesore or a source of discomfort to those in the immediate vicinity and yet not be a cause of typhoid fever. Further, the leachings from such privy or cesspool might find their way into and contaminate the water supply, and the water be consumed without any apparent danger to those using it. But with the entrance to such privy or cesspool of the discharges from a person suffering, or recently recovered, from typhoid fever; these receptacles would then become centers of infection, and a positive danger to those living in their immediate vicinity, and to those using the water from any source into which the leachings from such receptacles might find their way. It is probable that very many of the 1,446 cases of typhoid fever in Table 32, attributed to insanitary surroundings, were due to infected water, and, in some instances, to infected milk or other food.

Cases of typhoid fever due to infected food are difficult to trace, and it is probable that the one per cent of cases, shown in Table 32, attributed to this source, does not nearly represent the actual number of cases resulting therefrom.

The cases of typhoid fever due to milk infection are probably represented to a considerable extent by the number of deaths from this disease in children under five years of age; and which constitute about four and one-half per cent of all the deaths from this disease.

The transmission of typhoid fever by flies is believed to play a more important part in the spreading of this disease than is generally supposed, but the connection between this source and individual cases of the disease cannot ordinarily be traced by those in charge of the public health service. Whenever a common privy exists, there will always be a possibility of the infection of the contents of the pit by the discharges from an incipient or ambulatory case of typhoid fever, and a strong probability of its infection during, and for some time subsequent to, an outbreak of this disease on the premises where the privy is located. As there is little, if any, effort made to exclude the common house-fly from the common privies, and, in many instances, a very imperfect exclusion of them from our homes; from stores where articles of food are exposed for sale, and from the rooms where cases of typhoid fever are present, the probability of infection of food in the home and in the store is ever present.

It is possible that some of the 28 cases of typhoid fever, shown in Table 32, attributed to infected houses, articles of clothing, etc., were really due to infection in a well, privy or cesspool, rather than to infection in the house itself.

TABLE 32.—*The principal reported sources of contagium in 20,064 cases of typhoid fever, in Michigan, in the twenty years, 1891-1910.*

Reported sources.	Number of cases.	Per cent of cases in which the source was known.
Water and ice	11,309	56.4
Outside jurisdiction	4,055	20.2
Traced to former cases in the same locality	2,864	14.3
Insanitary surroundings, defective sewerage, filth, etc	1,446	7.2
Milk and other foods	272	1.4
Flies	89	.4
Infected houses, articles of clothing, etc	28	.1
Sources not stated or doubtful	40,405	*66.4

*Per cent of all the cases that were reported.

RESTRICTIVE AND PREVENTIVE MEASURES.

Table 33 indicates that, in 1905-1910, in a large number of instances, the disinfection of the discharges, and of clothing and other articles soiled by the discharges, of typhoid fever patients, was enforced. This is very gratifying, because it is through the discharges that the disease is spread. This does not, however, include the discharges from patients prior to the recognition of the disease and for some time prior to apparent recovery, nor the discharges from ambulatory cases which are seldom, if ever, recognized, all of which are believed to be fruitful sources of the disease.

The disinfection of rooms in which the patients were sick was enforced in 77 per cent of the cases. This shows a much greater recognition of the importance of this precautionary measure than was reported in any other year.

Judging by the per cent of cases in which the isolation of the patient was enforced, the necessity for this restrictive measure is quite generally recognized. This is also true, though to a less extent, in respect to the placarding of premises. It is sometimes urged that where proper precautions are taken in the care of typhoid fever patients, the isolation of the sick and the placarding of the premises are not necessary. To this, it should be stated, that inasmuch as strict precautions are not always observed in such cases, and for the further reason that many prominent medical men, in this and other countries, are advocates of the theory of the communicability of typhoid fever directly from patient to nurse, and to others who may come in contact with them, members of the family of those sick, other than those who may be in attendance upon the sick, should be excluded from the sick room, and the public should be warned against visiting the houses, and especially against drinking the water from any wells or making use of any outhouses on the premises where the disease is present.

The boiling of the drinking water, in cases where the water supplies were believed to have been the sources of the typhoid fever, was carried out in 61 per cent of the cases. The boiling of suspected water, for drinking and domestic purposes, does not entail much time or labor, and is an absolute safeguard against the communication of typhoid fever through this agency. There is an objection, however, especially in very warm weather, to the drinking of water which has been boiled and thus rendered insipid, but the protection which the boiling affords should more than offset any objection to this nature.

TABLE 33.—*Restrictive and preventive measures in typhoid fever, in Michigan, in the six years, 1905-1910.*

Restrictive and preventive measures.	Number of cases.	Per cent of all cases.
PLACARDING OF PREMISES:		
Enforced	10,406	63
Neglected, not stated or statements doubtful	6,195	37
ISOLATION OF SICK PERSONS:		
Enforced	12,825	77
Neglected	1,341	8
Not stated or statements doubtful	2,435	15
DISCHARGES FROM THE BOWELS AND BLADDER:		
Disinfected	13,654	82
Not disinfected	481	4
Not stated or statements doubtful	2,366	14
CLOTHING AND OTHER ARTICLES SOILED BY DISCHARGES:		
Disinfected	14,072	85
Not disinfected	257	1
Not stated or statements doubtful	2,272	14
INFECTED ROOMS:		
Disinfected	12,744	77
Not disinfected	1,216	7
Not stated or statements doubtful	2,643	16
DRINKING WATER:		
Boiled during the period of sickness	*813	61
Not boiled	*392	30
Not stated or statements doubtful	*117	9
PROTECTION AGAINST FLIES:		
House screened during fly time	†7,269	66
Not screened	†1,424	12
Not stated or statements doubtful	†2,611	22

*These figures represent the number of cases which were definitely traced, or believed to have been due to drinking infected water.

†Of the 16,601 cases of typhoid fever in the six years, 1905-1910, 4,937 occurred in months when there were no flies, consequently no necessity for screening; therefore the 4,937 cases are not included in these figures.

DIPHTHERIA AND CROUP IN MICHIGAN IN 1910 AND PRECEDING YEARS.

GENERAL PREVALENCE.

During the year 1910, diphtheria was reported present in 2,703 households, with totals of 3,433 cases and 454 deaths, an average of 1.27 cases and .17 deaths per household.

Diphtheria was more prevalent in 1910 than in any year since 1905 (shown in Table 34). Since 1893, there has been a general decline in the deaths per 100,000 population from this disease, due undoubtedly to the antitoxin treatment, introduced that year, also to the restrictive and preventive measures advocated by this Department.

By Table 35 it will be seen that, during the years previous to 1884, the death rate from this disease was much higher than in any year since.

THE PREVALENCE OF DIPHTHERIA IN URBAN AND RURAL LOCALITIES.

Table 36 indicates that, in 1910, with the exception of group two, diphtheria was most prevalent in the large centers of population, and least prevalent in the rural localities.

By Table 36A, it may be seen that, in 1910, the urban localities which showed much higher death rates from diphtheria than the death rate for this disease for the entire State for that year were: Calumet township, Detroit, Escanaba, Houghton, Iron Mountain, Ironwood, Ishpeming, Laurium, Manistee, Mt. Clemens, Owosso, Pontiac, Port Huron and Ypsilanti.

The localities, shown in Table 36A, in which the death rates were much lower in 1910 than the rate for the entire State for that year were: Battle Creek, Bay City, Grand Rapids, Hancock, Jackson, Kalamazoo, Lansing, Ludington, Muskegon, Saginaw, Sault Ste. Marie and Traverse City.

The localities, shown in Table 36A, which showed much higher death rates from diphtheria in 1910 than the average for such localities in the years 1904-1909, were: Bayne City, Calumet township, Escanaba, Holland, Houghton, Ionia, Laurium, Manistee, Mt. Clemens, Niles, Owosso, Pontiac, Port Huron, Three Rivers and Traverse City.

The localities, shown in Table 36A, which showed much lower death rates in 1910 than the average for such localities in the 1904-1909, were: Battle Creek, Bay City, Grand Rapids, Hancock, Iron Mountain, Ironwood, Ishpeming, Jackson, Kalamazoo, Lansing, Ludington, Muskegon, St. Joseph, Sault Ste. Marie and Wyandotte.

As shown in Table 36A, there were no deaths from diphtheria in 1910 in Adrian, Albion, Alpena, Ann Arbor, Benton Harbor, Cadillac, Coldwater, Dowagiac, Grand Haven, Hillsdale, Marquette, Menominee, Monroe, Negaunee and St. Joseph.

TABLE 34.—*The prevalence of diphtheria, in Michigan, during the ten years, 1884-1893, and before the use of antitoxin; also a similar statement for the seventeen years, 1894-1910, since the beginning of the general use of antitoxin.*

Years.	Population.*	Reported cases.†	Reported deaths.	Deaths per 100 cases.	Deaths per 100,000 population.
1884	1,853,658	3,915	905	23.1	48.8
1885	1,893,697	4,018	964	24.0	50.9
1886	1,933,735	4,244	982	23.1	50.8
1887	1,973,774	3,382	825	24.4	41.8
1888	2,013,812	2,228	532	23.9	26.4
1889	2,053,851	3,157	683	21.6	33.3
1890	2,093,889	4,206	1,050	25.0	50.1
1891	2,130,827	4,385	1,002	22.9	47.0
1892	2,167,765	4,818	1,099	22.8	50.7
1893	2,204,703	4,736	1,092	23.1	49.5
Averages 1884-1893	2,031,971	3,909	913	23.4	44.9
1894	2,241,641	3,852	744	19.3	33.2
1895	2,271,531	3,433	708	20.6	31.2
1896	2,301,421	4,013	757	18.9	32.9
1897	2,331,311	4,132	756	18.3	32.4
1898	2,361,201	2,357	477	20.2	20.2
1899	2,391,091	2,154	435	20.2	18.2
1900	2,420,982	2,706	528	19.5	21.8
1901	2,450,872	2,498	493	19.7	20.1
1902	2,475,499	2,993	500	16.4	20.2
1903	2,502,758	3,670	569	15.5	22.7
1904	2,530,016	3,510	538	15.3	21.3
1905	2,557,275	2,159	465	21.5	18.2
1906	2,584,533	3,648	453	12.4	17.5
1907	2,611,792	2,935	388	13.2	14.9
1908	2,639,050	2,658	327	12.3	12.4
1909	2,666,309	3,109	397	12.8	14.9
1910	2,810,173	3,433	454	13.2	16.2
Average	2,479,262	3,133	529	16.9	21.3

*Estimated for intercensal years.

†From many localities only the fatal cases were reported, so that the figures in this column do not represent the number of cases that actually occurred.

TABLE 35.—*The number of deaths from diphtheria and croup, in Michigan, per 100,000 persons living, in each of the fifteen years, 1869-1883. Compiled from reports to the Secretary of State.*

Years	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.
Deaths	17.0	20.9	22.5	28.2	29.6	26.2	26.9	34.7	50.6	72.8	110.5
Years	1880.	1881.	1882.	1883.	Average. 1869–1883.						
Deaths	113.9	145.2	102.1	75.7	58.5						

TABLE 36.—*The prevalence of diphtheria in urban and rural localities, in Michigan, in 1910.*

Localities—Grouped according to density of population.	Population.	Health jurisdictions.			Cases.*	Deaths.	Death rates per 100,000 of the population.
		Total.	Infected.				
			Number.	Per cent of all jurisdictions.			
Cities over 50,000	628,847	3	3	100	1,436	162	25.8
Cities from 25,000 to 50,000	211,082	6	6	100	269	15	7.1
Cities from 10,000 to 25,000 and Calumet township (20,097)	223,916	16	16	100	512	66	29.5
Cities and villages from 5,000 to 10,000	166,749	24	23	96	149	31	18.6
Cities and villages under 5,000	402,408	388	84	22	350	67	16.6
Total urban	1,633,002	437	132	30	2,716	341	20.9
Rural localities—Townships†	1,177,171	1,235	236	19	717	113	9.6

*From many localities only the fatal cases were reported, therefore, these figures do not represent the number of cases that actually occurred.

†Exclusive of Calumet township, which, for the purpose of this study, is included in the third group of urban localities which have corresponding populations.

TABLE 36A.—*The prevalence of diphtheria in 1910, and preceding years, in each of the principal localities included in the first four groups in Table 35.*

Localities.	1910.				Average, 1904-1909.			
	Population.	Cases.	Deaths.	Deaths per 100,000 inhabitants.	Population.*	Cases.	Deaths.	Deaths per 100,000 inhabitants.
Adrian	10,763	3	0	....	11,322	†13	1	8.8
Albion	5,833	1	0	....	5,208	2	0	....
Alpena	12,706	2	0	....	12,774	†6	3	23.5
Ann Arbor	14,817	27	0	....	14,654	8	.8	5.5
Battle Creek	25,267	44	2	7.9	24,495	52	4	16.3
Bay City	45,166	92	3	6.6	40,575	39	7	17.3
Benton Harbor	9,185	1	0	....	6,790	9	.7	10.3
Boyne City	5,218	3	1	19.2	3,416	‡	.3	8.8
Cadillac	8,375	4	0	....	7,453	10	2	26.8
Calumet township	20,097	27	17	84.6	17,949	27	5	27.9
Cheboygan	6,859	3	1	14.6	6,881	†2	.8	11.6
Coldwater	5,945	8	0	....	6,231	1	.2	3.2
Detroit	465,766	1,296	147	31.6	343,137	†842	100	29.1
Dowagiac	5,088	4	0	....	4,562	3	.8	17.5
Escanaba	13,194	109	11	83.4	12,066	19	2	16.6
Flint	38,550	48	6	15.7	15,997	16	3	18.8
Grand Haven	5,856	1	0	....	5,549	2	0	....
Grand Rapids	112,571	87	11	9.8	100,814	257	25	24.8
Hancock	8,981	8	1	11.1	7,279	‡	2	27.5
Hillsdale	5,001	2	0	....	5,221	.2	0	....
Holland	10,490	15	2	19.1	9,701	8	1	10.3
Houghton	5,113	4	2	39.1	4,963	†	.7	14.1
Ionia	5,030	2	1	19.9	5,230	2	.2	3.8
Iron Mountain	9,216	3	2	21.7	8,174	11	5	61.2
Ironwood	12,821	23	7	54.6	10,216	‡	8	78.3
Ishpeming	12,448	52	6	48.2	10,603	68	7	66.0
Jackson	31,433	24	2	6.4	25,375	41	6	23.6
Kalamazoo	39,437	29	1	2.5	33,143	52	4	12.1
Lansing	31,229	32	1	3.2	22,646	25	3	13.2
Laurium	8,537	‡	9	105.4	8,910	‡	.5	5.6
Ludington	9,132	3	1	11.0	7,317	15	3	41.0
Manistee	12,381	18	3	24.2	11,738	17	2	17.0
Marquette	11,503	15	0	....	11,045	15	2	18.1
Menominee	10,507	10	0	....	10,020	3	1	10.0
Monroe	6,893	12	0	....	6,806	16	1	14.7
Mt. Clemens	7,707	‡	6	77.9	7,441	16	3	40.3
Muskegon	24,064	14	1	4.2	20,946	28	3	14.3
Negaunee	8,460	12	0	....	6,711	21	2	29.8
Niles	5,156	4	1	19.4	4,863	.8	.2	4.1
Owosso	9,639	19	2	20.7	9,426	§6	.8	8.5
Pontiac	14,532	108	5	34.4	11,581	¶51	2	17.3
Port Huron	18,863	82	12	63.6	20,572	38	5	24.3
Saginaw	50,510	53	4	7.9	49,276	95	10	20.3
St. Joseph	5,936	0	0	....	5,427	2	.5	9.2
Sault Ste. Marie	12,615	5	1	7.9	12,007	10	2	16.7
Three Rivers	5,072	1	1	19.7	4,140	.7	.3	7.2
Traverse City	12,115	2	1	8.3	12,381	14	.5	4.0
Wyandotte	8,287	18	1	12.1	5,577	‖13	2	35.9
Ypsilanti	6,230	20	2	32.1	7,718	†11	2	25.9

---

*Estimated for intercensal years.

†Average for five years only.

‡Fatal cases only reported.

§Average for four years only.

¶Average for two years only.

‖Average for three years only.

WHOOPING-COUGH IN MICHIGAN IN 1910 AND PRECEDING YEARS.

GENERAL PREVALENCE.

During the year ending December 31, 1910, whooping-cough was reported present in 726 households, with a total of 1,136 cases, including 287 deaths. As the health officers of many localities did not report the non-fatal cases of whooping-cough occurring in their localities, it is impossible to determine, with any degree of accuracy, the total number of households infected or the number of cases that occurred in such households.

In 1910, compared with the preceding year, the number of cases of whooping-cough reported to this Department was slightly higher, which was also true of the deaths.

In studying the fatality rates from whooping-cough, particularly in recent years, the fact should be borne in mind that, prior to 1898, not all deaths were reported; and that while the deaths from whooping-cough are now fully reported, a large number of cases are not reported, making the fatality in recent years much too high.

Table 38 shows the death rates from whooping-cough, as compiled by the Secretary of State, prior to the commencment of the compilation of this disease by the State Health Department. Comparing the death rates prior to 1886 with those since that time, it will be seen that, as a rule, those of the former period were much higher, probably due to the different methods in use in the two departments in the classification of deaths from whooping-cough when complicated with or followed by other diseases induced by it.

TABLE 37.—*The general prevalence of whooping-cough, in Michigan, during the twenty-five years, 1886-1910.*

Years.	Population.*	Reported cases†.	Reported deaths.	Deaths per 100 cases.‡	Deaths per 100,000 of the population.
1886	1,933,735	2,642	62	2.3	3.2
1887	1,973,774	2,267	59	2.6	2.0
1888	2,013,812	2,502	49	2.0	2.4
1889	2,053,851	2,694	41	1.5	2.0
1890	2,093,889	983	20	2.0	1.0
1891	2,130,827	2,360	101	4.3	4.7
1892	2,167,765	3,188	77	2.4	3.6
1893	2,204,703	4,047	134	3.3	6.1
1894	2,241,641	4,555	123	2.7	5.5
1895	2,271,531	4,284	109	2.5	4.8
1896	2,301,421	5,466	91	1.7	4.0
1897	2,331,311	3,978	72	1.8	3.1
1898	2,361,201	5,300	267	5.0	11.3
1899	2,391,091	6,509	216	3.3	9.0
1900	2,420,982	3,397	177	5.2	7.3
1901	2,450,872	2,955	118	4.0	4.8
1902	2,475,499	3,534	222	6.3	8.9
1903	2,502,758	4,172	361	8.7	14.4
1904	2,530,016	1,779	141	7.9	5.6
1905	2,557,275	1,196	119	9.9	4.7
1906	2,584,533	1,364	392	28.7	15.2
1907	2,611,792	872	214	24.5	8.2
1908	2,639,050	1,248	283	22.7	10.8
1909	2,666,309	1,054	213	20.2	8.0
1910	2,810,173	1,136	287	25.3	10.2
Average	2,348,792	2,939	158	5.4	6.7

*Estimated for intercensal years.

†From many localities only the fatal cases were reported during many of the years,

‡For the reason that, in many instances, only the fatal cases were reported, these fatality rates are inaccurate.

TABLE 38.—*The number of deaths from whooping-cough, in Michigan, per 100,000 persons living, in each of the seventeen years, 1869-1885. Compiled from the Secretary of State's Vital Statistics of Michigan.*

Years	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.
Deaths	13.9	10.1	5.5	15.1	15.6	11.2	7.2	12.4	8.7	8.5	10.2
Years	1880.	1881.	1882.	1883.	1884.	1885.	Average, 1869-1885.				
Deaths	16.1	8.4	5.0	5.2	8.8	7.4	10.0				

SCARLET FEVER IN MICHIGAN IN 1910 AND PRECEDING YEARS.

GENERAL PREVALENCE.

During the year 1910, scarlet fever was reported present in 4,626 households in this State, with an aggregate of 6,501 cases, including 302 deaths.

In 1910, compared with the previous year, there were 968 more households infected and there occurred 1,348 cases and 34 deaths more.

By a comparison of the death rates in Tables 39 and 40 it will be seen that, from 1870 to 1883, inclusive, the average death rate from scarlet fever was much higher than in any year since that time, the highest rates being in the years prior to the establishment of the State Board of Health.

PREVALENCE OF SCARLET FEVER IN URBAN AND RURAL LOCALITIES.

As shown in Table 41, the death rates from scarlet fever were greater in the urban than in the rural localities.

By Table 41A, it may be seen that, in 1910, the urban localities which showed much higher death rates from scarlet fever than the death rate for this disease for the entire State (10.7 per 100,000 population) for that year were: Albion, Bay City, Benton Harbor, Boyne City, Cadillac, Cheboygan, Detroit, Grand Rapids, Holland, Iron Mountain, Ironwood, Ishpeming, Kalamazoo, Marquette, Pontiac, Three Rivers and Ypsilanti.

The localities, shown in Table 41A, in which the death rates were much lower in 1910 than the rate for the entire State for that year, were: Battle Creek and Lansing.

The localities, shown in Table 41A, which showed much higher death rates from scarlet fever in 1910 than the average for such localities for the years 1904-1909, were: Albion, Battle Creek, Bay City, Benton Harbor, Boyne City, Cadillac, Cheboygan, Grand Rapids, Hancock, Holland, Iron Mountain, Kalamazoo, Ludington, Manistee, Marquette, Menominee, Mt. Clemens, Pontiac, Three Rivers and Ypsilanti.

The localities, shown in Table 41A, which showed much lower death rates from scarlet fever in 1910 than the average for such localities in the years 1904-1909, were: Calumet township, Lansing and Laurium.

There were no deaths from scarlet fever in 1910 in Alpena, Ann Arbor, Coldwater, Dowagiac, Escanaba, Flint, Grand Haven, Hillsdale, Houghton, Ionia, Jackson, Monroe, Muskegon, Negaunee, Niles, Owosso, Port Huron, Saginaw, St. Joseph, Sault Ste. Marie, Traverse City and Wyandotte.

TABLE 39.—*The prevalence of scarlet fever, in Michigan, during the twenty-seven years, 1884-1910.*

Years.	Population.*	Reported cases.†	Reported deaths.	Deaths per 100 cases.	Deaths per 100,000 of the population.
1884	1,853,658	2,476	230	9.3	12.4
1885	1,893,697	2,750	187	6.8	9.9
1886	1,933,735	3,046	275	9.0	14.2
1887	1,973,774	3,400	314	9.2	15.9
1888	2,013,812	2,989	200	6.7	9.9
1889	2,053,851	3,535	166	4.7	8.1
1890	2,093,889	3,835	162	4.2	7.7
1891	2,130,827	6,212	286	4.6	13.4
1892	2,167,765	7,075	487	6.9	22.5
1893	2,204,703	6,065	415	6.8	18.8
1894	2,241,641	5,500	203	3.7	9.1
1895	2,271,531	3,908	125	3.2	5.5
1896	2,301,421	2,646	81	3.1	3.9
1897	2,331,311	2,482	115	4.6	4.9
1898	2,361,201	2,409	100	4.2	4.2
1899	2,391,091	4,345	171	3.9	7.2
1900	2,420,982	6,734	306	4.5	12.6
1901	2,450,872	7,726	298	3.9	12.2
1902	2,475,499	6,582	248	3.8	10.0
1903	2,502,758	5,353	212	4.0	8.5
1904	2,530,016	4,088	228	5.6	9.0
1905	2,557,275	2,286	125	5.5	4.9
1906	2,584,533	3,066	255	7.3	8.7
1907	2,611,792	2,514	167	6.6	6.4
1908	2,639,050	3,087	191	6.2	7.2
1909	2,666,309	5,153	268	5.2	10.1
1910	2,810,173	6,501	302	4.6	10.7
Average	2,313,599	4,288	227	5.3	9.8

*Estimated for intercensal years.

†From many localities only the fatal cases were reported, so that the figures in this column do not represent the number of cases that actually occurred.

TABLE 40.—*The number of deaths from scarlet fever, in Michigan, per 100,000 persons living in each of the fifteen years, 1869-1883. Compiled from the Secretary of State's Vital Statistics of Michigan.*

Years	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	Average, 1869-1883.
Deaths	22.1	72.0	56.6	44.3	43.9	32.2	30.0	27.4	26.9	27.7	26.3	22.7	22.8	34.3	37.9	35.1

TABLE 41.—*The prevalence of scarlet fever in urban and rural localities, in Michigan, in 1910.*

Localities—Grouped according to density of population.	Population.	Health jurisdictions.			Cases.*	Deaths.	Death rates per 100,000 of the population.
			Infected.				
		Total.	Number.	Per cent of all jurisdictions.			
Cities over 50,000	628,847	3	3	100	2,212	108	17.2
Cities from 25,000 to 50,000	211,082	6	6	100	824	27	12.8
Cities from 10,000 to 25,000 and Calumet township (20,097)	223,916	16	15	94	395	20	8.9
Cities and villages from 5,000 to 10,000	166,749	24	21	88	319	30	18.0
Cities and villages under 5,000	402,408	388	124	32	936	27	6.7
Total urban	1,633,002	437	169	39	4,686	212	13.0
Rural localities—Townships†	1,177,171	1,235	363	29	1,815	90	7.6

*From many localities only the fatal cases were reported, therefore, these figures do not represent the number of cases that actually occurred.

†Exclusive of Calumet township, which, for the purpose of this study, is included in the third group of urban localities which have corresponding populations.

TABLE 41A.—*The prevalence of scarlet fever in 1910, and preceding years, in each of the principal localities included in the first four groups in Table 41.*

Localities.	1910.				Average, 1904-1909.			
	Population.	Cases.	Deaths.	Deaths per 100,000 inhabitants.	Population.*	Cases.	Deaths.	Deaths per 100,000 inhabitants.
Adrian	10,763	0	0	....	11,322	3	.5	4.4
Albion	5,833	3	1	17.1	5,208	5	0	....
Alpena	12,706	2	0	....	12,774	.5	.2	1.6
Ann Arbor	14,817	10	0	....	14,654	18	0	....
Battle Creek	25,267	105	1	4.0	24,495	25	.3	1.2
Bay City	45,166	426	19	42.1	40,575	106	7	17.3
Benton Harbor	9,185	55	3	32.7	6,790	14	.5	7.4
Boyne City	5,218	22	1	19.2	3,416	2	.2	5.9
Cadillac	8,375	32	5	59.7	7,453	8	2	26.8
Calumet township	20,097	12	2	10.0	17,949	58	5	27.9
Cheboygan	6,859	11	2	29.2	6,881	6	0	....
Coldwater	5,945	45	0	....	6,231	.7	.2	3.2
Detroit	465,766	1,554	85	18.2	343,137	611	68	19.8
Dowagiac	5,088	0	0	....	4,562	2	0	....
Escanaba	13,194	1	0	....	12,066	6	.7	5.8
Flint	38,550	10	0	....	15,997	26	.8	5.0
Grand Haven	5,856	15	0	....	5,549	11	0	....
Grand Rapids	112,571	591	23	20.4	100,814	363	9	8.9
Hancock	8,981	1	1	11.1	7,279	†	.3	4.1
Hillsdale	5,001	2	0	....	5,221	7	.3	5.7
Holland	10,490	60	2	19.1	9,701	22	.7	7.2
Houghton	5,113	0	0	....	4,963	.1	0	....
Ionia	5,030	1	0	....	5,230	5	0	....
Iron Mountain	9,216	26	11	119.4	8,174	17	1	12.2
Ironwood	12,821	†	4	31.2	10,216	†	4	39.2
Ishpeming	12,448	58	2	16.1	10,603	34	2	18.9
Jackson	31,433	23	0	....	25,375	38	1	3.9
Kalamazoo	39,437	245	6	15.2	33,143	44	2	6.0
Lansing	31,229	15	1	3.2	22,646	15	2	8.8
Laurium	8,537	1	1	11.7	8,910	†	4	44.9
Ludington	9,132	11	1	11.0	7,317	3	.2	2.7
Manistee	12,381	22	1	8.1	11,738	7	.5	4.3
Marquette	11,503	21	4	34.8	11,045	15	.3	2.7
Menominee	10,507	78	1	9.5	10,020	†	.5	5.0
Monroe	6,893	17	0	....	6,806	7	.2	2.9
Mt. Clemens	7,707	2	1	13.0	7,441	3	.3	4.0
Muskegon	24,064	12	0	....	20,946	98	2	9.5
Negaunee	8,460	14	0	....	6,711	9	.7	10.4
Niles	5,156	26	0	....	4,863	3	0	....
Owosso	9,639	6	0	....	9,426	2	0	....
Pontiac	14,532	61	4	27.5	11,581	2	.2	1.7
Port Huron	18,863	28	0	....	20,572	37	1	4.9
Saginaw	50,510	67	0	....	49,276	36	1	2.0
St. Joseph	5,936	0	0	....	5,427	‡.4	2	36.9
Sault Ste. Marie	12,615	7	0	....	12,007	10	.5	4.2
Three Rivers	5,072	9	1	19.7	4,140	2	0	....
Traverse City	12,115	18	0	....	12,381	19	.5	4.0
Wyandotte	8,287	11	0	....	5,577	13	2	35.9
Ypsilanti	6,230	9	2	32.1	7,718	6	.3	3.9

*Estimated for intercensal years.
†Fatal cases only reported.
‡Average for five years only.

MEASLES IN MICHIGAN IN 1910 AND PRECEDING YEARS.

GENERAL PREVALENCE.

During the year 1910, measles was reported present, in this State, in 8,194 households, with a total of 13,934 cases, including 237 deaths.

As only fatal cases of measles were reported from many localities, it was impossible to determine the number of infected households or the cases occurring therein.

By reference to Table 42 it may be seen that, in 1910, compared with the preceding year, there were 4,887 cases and 13 deaths more.

In 1910, compared with the average for twenty years, 1890-1909, there were 3,086 more cases and 93 more deaths, and the deaths per 100,000 population were 2.1 more.

A comparison of the death rates in Tables 42 and 43 indicates that, with the exception of the year 1900, as a rule measles was much more prevalent in the years prior to the inauguration, by this Department, in 1890, of active measures for its restriction, than in the years since that time.

TABLE 42.—*The prevalence of measles, in Michigan, during the twenty-one years, 1890-1910.*

Years.	Population.*	Reported cases.†	Reported deaths.	Deaths per 100 cases.	Deaths per 100,000 of the population.
1890	2,093,889	11,911	140	1.2	6.7
1891	2,130,827	12,173	149	1.2	7.0
1892	2,167,765	3,830	76	2.0	3.5
1893	2,204,703	7,334	119	1.6	5.4
1894	2,241,641	10,518	55	.5	2.5
1895	2,271,531	3,870	12	.3	.5
1896	2,301,421	15,409	156	1.0	6.8
1897	2,331,311	32,543	159	.5	6.8
1898	2,361,201	11,614	124	1.1	5.3
1899	2,391,091	12,005	166	1.4	6.9
1900	2,420,982	20,403	282	1.4	11.6
1901	2,450,872	4,629	62	1.3	2.5
1902	2,475,499	11,978	162	1.4	6.5
1903	2,502,758	8,941	140	1.6	5.6
1904	2,530,016	10,386	176	1.7	7.0
1905	2,557,275	6,061	111	1.8	4.3
1906	2,584,533	7,403	188	2.5	7.3
1907	2,611,792	12,139	252	2.1	9.6
1908	2,639,050	4,775	121	2.5	4.6
1909	2,666,309	9,047	224	2.5	8.0
1910	2,810,173	13,934	237	1.7	8.1
Average	2,416,411	10,995	148	1.3	6.1

*Estimated for intercensal years.

†From many localities only the fatal cases were reported, so that the figures in this column do not represent the number of cases that actually occurred.

TABLE 43.—*The number of deaths from measles, in Michigan, per 100,000 persons living, in each of the twenty-one years, 1869-1889. Compiled from the Secretary of State's Vital Statistics of Michigan.*

Years	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.
Deaths	12.9	4.7	5.5	14.1	18.6	3.4	9.5	8.1	4.1	1.0	10.5
Years	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	Av. 1869-1889.
Deaths	7.6	15.2	8.7	14.5	7.9	2.0	6.8	14.6	20.6	5.1	9.3

SMALLPOX IN MICHIGAN IN 1910 AND PRECEDING YEARS.

GENERAL PREVALENCE.

During the year 1910, smallpox was reported present in 1,412 households, in this State, with an aggregate of 3,319 cases, including 120 deaths.

As may be seen by Table 44, smallpox was unusually prevalent in 1910, compared with former years, also unusually fatal.

Table 45 shows that the average number of deaths from smallpox, per 100,000 population, for the thirteen years prior to the institution, by this Department, of active measures for the restriction of this disease, was very much greater than the average for the twenty-nine years since that time, although the death rate per 100,000 population in 1910 practically equaled the average death rate for those thirteen years above mentioned.

THE PREVALENCE OF SMALLPOX IN URBAN AND RURAL LOCALITIES.

By Table 46 it may be seen that, in 1910, a greater proportion of urban than rural localities was infected with smallpox. It may also be seen that the case rate (number of cases per 100,000 inhabitants) was much higher in the rural than in the urban localities.

By the footnotes of Table 46, attention is called to those localities in which the greatest number of deaths from smallpox occurred.

By Table 46A it may be seen that, in 1910, the urban localities which showed much higher case rates from smallpox than the case rate for this disease for the entire State for that year (118.9 per 100,000 inhabitants), were: Bay City, Calumet township, Cheboygan, Flint, Niles, Owosso, Port Huron and Saginaw.

The localities, shown in Table 46A, in which the case rate from smallpox was much lower in 1910 than the rate for the entire State for that year, were: Ann Arbor, Cadillac, Coldwater, Detroit, Escanaba, Grand Rapids, Kalamazoo, Manistee, Monroe, Muskegon and Pontiac.

The localities, shown in Table 46A, which showed much higher case rates from smallpox in 1910 than the average for such localities for the years 1904-1909, were: Alpena, Calumet township, Cheboygan, Flint, Lansing, Niles, Owosso, Port Huron and Saginaw.

The localities, shown in Table 46A, which showed much lower case rates from smallpox in 1910 than the average for such localities in the years 1904-1909, were: Ann Arbor, Battle Creek, Cadillac, Detroit, Escanaba, Grand Rapids, Kalamazoo, Manistee, Monroe and Muskegon.

There were no cases of smallpox reported in 1910 from Adrian, Albion, Benton Harbor, Boyne City, Grand Haven, Hancock, Hillsdale, Holland, Houghton, Ionia, Iron Mountain, Ironwood, Ishpeming, Jackson, Laurium, Ludington, Marquette, Menominee, Mt. Clemens, Negaunee, St. Joseph, Sault Ste. Marie, Three Rivers, Traverse City, Wyandotte and Ypsilanti.

TABLE 44.—*The prevalence of smallpox, in Michigan, during the twenty-nine years, 1882-1910.*

Years.	Population.*	Reported cases.	Reported deaths.	Deaths per 100 cases.	Deaths per 100,000 of the population.
1882	1,745,298	589	159	27.0	9.1
1883	1,799,478	29	2	6.9	.1
1884	1,853,658	22	3	13.6	.2
1885	1,893,697	27	6	22.2	.3
1886	1,933,735	24	7	29.2	.4
1887	1,973,774	4	0	....	....
1888	2,013,812	42	6	14.3	.3
1889	2,053,851	57	4	7.0	.2
1890	2,093,889	2	0	....	....
1891	2,130,827	3	0	....	....
1892	2,167,765	1	1	100.0	.05
1893	2,204,703	10	3	30.0	.1
1894	2,241,641	285	60	21.1	2.7
1895	2,271,531	187	47	25.1	2.1
1896	2,301,421	38	16	42.1	.7
1897	2,331,311	15	0	....	....
1898	2,361,201	32	1	3.1	.04
1899	2,391,091	139	6	4.3	.3
1900	2,420,982	694	9	1.3	.4
1901	2,450,872	5,088	31	.6	1.3
1902	2,475,499	7,086	40	.6	1.6
1903	2,502,758	6,341	33	.5	1.3
1904	2,530,016	5,753	24	.4	.9
1905	2,557,275	2,985	74	2.5	2.9
1906	2,584,533	1,240	3	.2	.1
1907	2,611,792	1,712	8	.5	.3
1908	2,639,050	2,306	8	.3	.3
1909	2,666,309	1,533	4	.3	.2
1910	2,810,173	3,319	120	3.6	4.3
Average	2,276,274	1,364	23	1.7	1.0

*Estimated for intercensal years.

TABLE 45.—*The number of deaths from smallpox, in Michigan, per 100,000 persons living in each of the thirteen years, 1869-1881. Compiled from the Secretary of State's Vital Statistics of Michigan.*

Years	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	Average 1869–81.
Deaths	3.7	0.8	6.0	23.7	7.0	1.3	1.8	5.2	6.8	0.4	0.4	0.2	4.9	4.8

TABLE 46.—*The prevalence of smallpox in urban and rural localities, in Michigan, in 1910.*

Localities—Grouped according to density of population.	Population.	Health jurisdictions.			Cases.	Deaths.	Case rates per 100,000 of the population.
		Total.	Infected.				
			Number.	Per cent of all jurisdictions.			
Cities over 50,000	628,847	3	3	100	393	*48	62.5
Cities from 25,000 to 50,000	211,082	6	5	83	439	†34	208.0
Cities from 10,000 to 25,000 and Calumet township (20,097)	223,916	16	8	50	131	0	58.5
Cities and villages from 5,000 to 10,000	166,749	24	7	29	189	0	113.3
Cities and villages under 5,000	402,408	388	77	20	535	‡21	132.9
Total urban	1,633,002	437	100	23	1,687	103	103.3
Rural localities—Townships§	1,177,171	1,235	235	19	1,632	17	138.6

*The forty-eight deaths occurred in Saginaw city.

†Thirty of the deaths occurred in Bay City.

‡Nineteen of the deaths occurred in the Home of the Feeble-minded and Epileptic at Lapeer.

§Exclusive of Calumet township, which, for the purpose of this study, is included in the third group of urban localities which have corresponding populations.

TABLE 46A.—*The prevalence of smallpox in 1910, and preceding years, in each of the principal localities included in the first four groups in Table 46.*

Localities.	1910.			Average, 1904-1909.		
	Population.	Cases.	Cases per 100,000 inhabitants.	Population.*	Cases.	Cases per 100,000 inhabitants.
Adrian	10,763	0	....	11,322	2	17.7
Albion	5,833	0	....	5,208	8	153.6
Alpena	12,706	17	133.8	12,774	3	23.5
Ann Arbor	14,817	1	6.7	14,654	7	47.8
Battle Creek	25,267	23	91.0	24,495	35	142.8
Bay City	45,166	132	292.3	40,575	98	241.5
Benton Harbor	9,185	0	....	6,790	2	29.5
Boyne City	5,218	0	....	3,416	.8	23.4
Cadillac	8,375	1	11.9	7,453	6	80.5
Calumet township	20,097	32	159.2	17,949	7	39.0
Cheboygan	6,859	71	1,035.1	6,881	23	334.3
Coldwater	5,945	1	16.8	6,231	8	128.4
Detroit	465,766	33	7.1	343,137	59	17.2
Dowagiac	5,088	6	117.9	4,562	8	175.4
Escanaba	13,194	1	7.6	12,066	10	82.9
Flint	38,550	233	604.4	15,997	26	162.5
Grand Haven	5,856	0	....	5,549	9	162.2
Grand Rapids	112,571	47	41.8	100,814	62	61.5
Hancock	8,981	0	....	7,279	0	....
Hillsdale	5,001	0	....	5,221	4	76.6
Holland	10,490	0	....	9,701	9	92.8
Houghton	5,113	0	....	4,963	0	....
Ionia	5,030	0	....	5,230	5	95.6
Iron Mountain	9,216	0	....	8,174	.7	8.6
Ironwood	12,821	0	....	10,216	.2	2.0
Isbpeming	12,448	0	....	10,603	.2	1.9
Jackson	31,433	0	....	25,375	21	82.8
Kalamazoo	39,437	10	25.4	33,143	13	39.2
Lansing	31,229	41	131.3	22,646	19	83.9
Laurium	8,537	0	....	8,910	0	....
Ludington	9,132	0	....	7,317	9	123.0
Manistee	12,381	9	72.7	11,738	26	221.5
Marquette	11,503	0	....	11,045	1	9.1
Menominee	10,507	0	....	10,020	2	20.0
Monroe	6,893	2	29.0	6,806	3	44.1
Mt. Clemens	7,707	0	....	7,441	3	40.3
Muskegon	24,064	2	8.3	20,946	28	133.7
Negaunee	8,460	0	....	6,711	3	44.7
Niles	5,156	29	562.5	4,863	1	20.6
Owosso	9,639	79	819.6	9,426	14	148.5
Pontiac	14,532	5	34.4	11,581	4	34.5
Port Huron	18,863	64	339.3	20,572	7	34.0
Saginaw	50,510	313	619.7	49,276	108	219.2
St. Joseph	5,936	0	....	5,427	.5	9.2
Sault Ste. Marie	12,615	0	....	12,007	11	91.6
Three Rivers	5,072	0	....	4,140	2	48.3
Traverse City	12,115	0	....	12,381	13	105.0
Wyandotte	8,287	0	....	5,577	2	35.9
Ypsilanti	6,230	0	....	7,718	6	77.7

*Estimated for intercensal years.

POLIOMYELITIS (INFANTILE PARALYSIS) IN MICHIGAN IN 1910.

During the year 1910, poliomyelitis (infantile paralysis) was reported present in 57 localities in the State, with an aggregate of 104 cases, including 72 deaths.

Of the 104 persons taken sick, 58 were males and 46 were females.

In twenty-three instances, the average duration of sickness, in non-fatal cases, was 24.0 days.

In twenty-nine instances, the average duration of sickness, in fatal cases, was 6.3 days.

In eighteen instances, the average age of the males who recovered from this disease was 8.9 years; and in eleven instances, the average age of the females who recovered was 5.2 years.

In twenty-six instances, the average age of the males who died from this disease was 11.5 years; and in twenty instances, the average age of the females who died was 10.0 years.

CHICKEN-POX (VARICELLA) IN MICHIGAN IN 1910.

During the year ending December 31, 1910, chicken-pox was reported present in twenty-six localities in the State, 128 households being infected, with a total of 159 cases, including one death.

MUMPS (PAROTITIS) IN MICHIGAN IN 1910.

During the year, seven cases of mumps (parotitis) were reported to this Department, no deaths resulting.

ERYSIPELAS IN MICHIGAN IN 1910.

During the year 1910, reports were received relative to 171 cases of erysipelas in the State, 121 of which proved fatal.

TETANUS (LOCK-JAW) IN MICHIGAN IN 1910.

During the year 1910, there were reported to this Department, from thirty-six localities in the State, forty-six cases of tetanus, all of which terminated fatally.

Of the twenty-nine cases, in which a source of infection was stated, eight were due to gunshot wounds; four to toy pistol wounds; three to blank cartridge wounds; two to injuries in hand; two to injuries from accidents; two to wounds caused by kick from horse; two to vaccination; two to injuries to leg; and one each to the following causes: Wound caused by corn husking machine; wound from rusty nail and a broken arm.

In eighteen instances, the average period of incubation (from the time of wound or injury until tetanus developed) was 8.4 days.

In thirty-four instances, the average duration of sickness (from time tetanus developed until death occurred) was 4.0 days.

The average ages of all persons suffering from tetanus were: For males, 20.8 years; and for females, 23.9 years.

DISEASE OF ANIMALS, DANGEROUS TO MAN, IN MICHIGAN, IN 1910.

Whenever information is received at this office of the occurrence of an outbreak of any disease of animals, which, by reason of its communicability, may be considered dangerous to man, efforts are made to learn all facts relative to such outbreaks. The matter is reported to the State Live Stock Sanitary Commission, and the attention of the health officials of the locality, where the disease is reported present, is called to the fact of its reported prevalence, and they are requested to take immediate measures for the prevention of its spread, by establishing and maintaining quarantine over the diseased animals until relieved by the State Live Stock Sanitary Commission.

During the year 1910, the two following diseases of this character were reported to this Department:

RABIES (HYDROPHOBIA) IN MICHIGAN IN 1910.

During the year 1910, there were reported to this Department ten outbreaks of rabies among dogs. One person was bitten, resulting in his death.

ACTINOMYCOSIS (LUMPY-JAW) IN MICHIGAN IN 1910.

During the year 1910, one outbreak of actinomycosis (lumpy-jaw) among cattle was reported to this Department.

ALLEGED NUISANCES IN MICHIGAN IN 1910.

During the year 1910, communications relative to 133 alleged nuisances in Michigan were received at the office of the Secretary of this Board.

The causes, to which the alleged nuisances mentioned in the communications were attributed, may be classified as follows:

Privies, 20; defective drains, 14; slaughter houses, 14; stagnant water, 11; manure heaps, 11; dumping refuse on ground, 11; insanitary houses, 10; polluted streams and lakes, 10; open drains, 8; pig pens, 6; unburied and insufficiently buried animals, 6; polluted wells, 3; garbage and filth in streets, 3; insanitary meat markets, 2; insanitary barn, 1; curing hides. 1; chicken-coop, 1, and insanitary vault, 1.

Whenever the complaint of an alleged nuisance is received at this office, the health officer, whose duty it is to act, is usually informed of the nature of the nuisance, and is requested to investigate the same. At the same time, the sections of the law and pamphlets, publications of this Board, pertaining to nuisances and to the duty of local boards of health relative thereto, are sent to him and the person making the complaint.

The State Board of Health had no authority, under the old law, to abate nuisances, simply advising local boards of health in regard thereto, but the new law, Act 293, P. A. 1909, confers that power on this Board through its medical inspector, who shall act under the direction of the State Board of Health. This Board will exercise its authority in this matter only in cases where the local boards refuse or neglect to do their duty.

INDEX.

INDEX.

Page
Actinomycosis (Lumpy-Jaw), in Michigan, in 1910 113
Advertising, immoral, act to prohibit 30–31

Bacteriological laboratory, report of the work in 22–29
    summary of examinations in 22–28
Blake, Charles A., resolutions on death of 12
Board of Health, State, annual reports of the 16
    general and special work in the office of 15–22
    members of the 5
    movements of the Secretary of the 18–20
    regular and special meetings of the 11–12
Bulletins, "Public Health, Michigan," fiscal year 1911 16–17

Chicken-pox (Varicella), in Michigan, in 1910 112
Compilation, methods of 48
    purposes of 47

Diphtheria, in Michigan, general prevalence of 97–99
    in 1910 and preceding years 97–100
    prevalence of in urban and rural localities 97–100
  laboratory work in connection with 26–29

Diseases, communicable, amendment to act preventing introduction of in the State 29
    in Michigan, in 1910 and preceding years 47–113
  occupational, act to provide for the reporting of by physicians 36
  of animals dangerous to man, in Michigan, in 1910 113
Drains, county, act to permit the use of for sewage disposal 36

Embalmers, examination and licensing of 14
Erysipelas, in Michgan, in 1910 112

Fever, scarlet, in Michigan, general prevalence of 103–105
    in 1910 and preceding years 103–106
    prevalence of in urban and rural localities 103,106
  typhoid, in Michigan, general prevalence of 85–87
    geographical distribution of 87–89
    in 1910 and preceding years 85–96
    prevalence of in urban and rural localities 89–92
    restrictive and preventive measures in 94–96
    sources of contagium in 92–94
Financial report, of the State Board of Health 42–43

Hospitals, maternity, act relative to licensing of 32–34
Hydrophobia (indexed "Rabies").

Infantile paralysis (indexed "Poliomyelitis").
Information, collection of 15
    dissemination of 16

Legislation, public health, in Michigan, in 1911 29–41
Lock-jaw (indexed "Tetanus").
Lumpy-jaw (indexed "Actinomycosis").

Measles, in Michigan, general prevalence of 107–108
    in 1910 and preceding years 107–108
Medical inspectors, State, localities visited by 18–22
  milk commissions, act relative to incorporation of 37–39

Page

- Meningitis, in Michigan, duration of sickness in 82–83
  - general prevalence of 78–79
  - in 1910 and preceding years 78–84
  - influence of age and sex in 82–83
  - prevalence of in urban and rural localities 79–81
  - restrictive and preventive measures in 84
  - seasonal prevalence of 81–82
  - sources of contagium and predisposing influences in 82
- Milk, act relative to certification of 37–39
  - bottles, act to prohibit the opening of 39–40
- Mumps (Parotitis), in Michigan, in 1910 112

- Neostyle work, summary of 16
- Nuisances, alleged, in Michigan, in 1910 113–114

- Occupational diseases, (indexed "Diseases, occupational").

- Parotitis (indexed "Mumps").
- Physiologies, placed on accredited list 12
- Pistols, explosives, etc., act to prohibit sale of 30
- Plans for State buildings, examination of 13–14
- Pneumonia, in Michigan, general prevalence of 48–49
  - geographical distribution of 49–51
  - in 1910 and preceding years 48–59
  - influence of age and sex in 54–55
  - influence of occupation in 57–58
  - predisposing influences in 54, 56
  - prevalence of in urban and rural localities 51–53
  - restrictive and preventive measures in 59
  - seasonal prevalence of 53–54
- Poison, act regulating sale of 40–41
- Poliomyelitis (infantile paralysis), in Michigan, in 1910 112

- Rabies (Hydrophobia), in Michigan, in 1910 113
- Reports, general plan of 48

- Sanitary engineer, work in the division of 20–22
- Scarlet fever (indexed "Fever, scarlet").
- Smallpox, in Michigan, general prevalence of 108–110
  - in 1910 and preceding years 108–111
  - prevalence of in urban and rural localities 108, 110–111
- State Board of Health (indexed "Board of Health, State").
- State Medical Inspectors (indexed "Medical Inspectors, State").
- State Sanatorium, amendment to act relative to establishment of 34
  - tuberculosis sanatorium, act making appropriations for 35–36

- Tetanus (Lock-jaw), in Michigan, in 1910 112–113
- Tuberculosis, amendment to act defining duties of health officers relative to 31–32
  - in Michigan, bacteriological diagnosis of 78
    - civil condition of patients 69
    - duration of sickness in 75–76
    - general prevalence of 60–61
    - geographical distribution of 61–63
    - in 1910 and preceding years 60–78
    - influence of age and sex in 67–68
    - influence of color in 68
    - influence of occupation in 69–75
    - location of the disease in cases of 66
    - prevalence of in urban and rural localities 63–65
    - restrictive and preventive measures in 76–77
    - seasonal prevalence of 65–66
    - sources of contagium in 67
  - laboratory work in connection with 25–26
- Typhoid fever (indexed "Fever, typhoid").

- Varicella (indexed "Chicken-pox").

- Water examinations, summary of 23–25
- Whooping-cough, in Michigan, general prevalence of 101–103
  - in 1910 and preceding years 101–103